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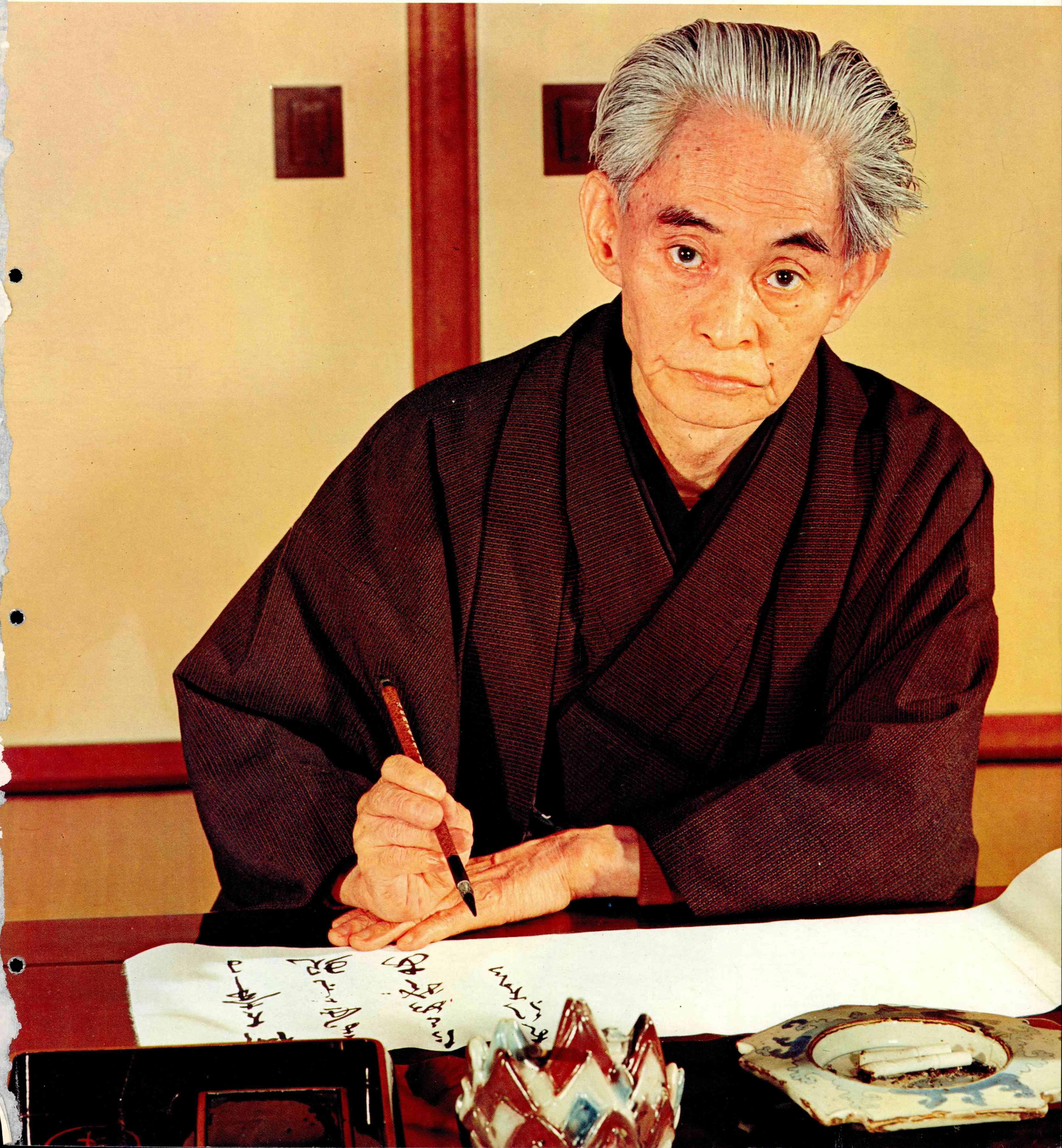
Japan Illustrated

The Japan Times
QUARTERLY MAGAZINE

A FACE-LIFTING FOR THE IMPERIAL PALACE

NOBEL PRIZE WINNING AUTHOR:
YASUNARI KAWABATA

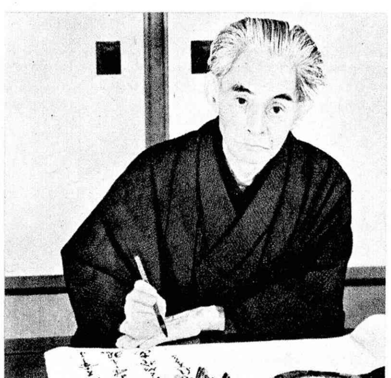
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CONTENTS



Cover Photo: Yasunari Kawabata, Nobel Prize-winning novelist, in the study of his home in Kamakura. Photo by K. Kakinuma.

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Japanese Currents

NEW YEAR

The Year of The Rooster

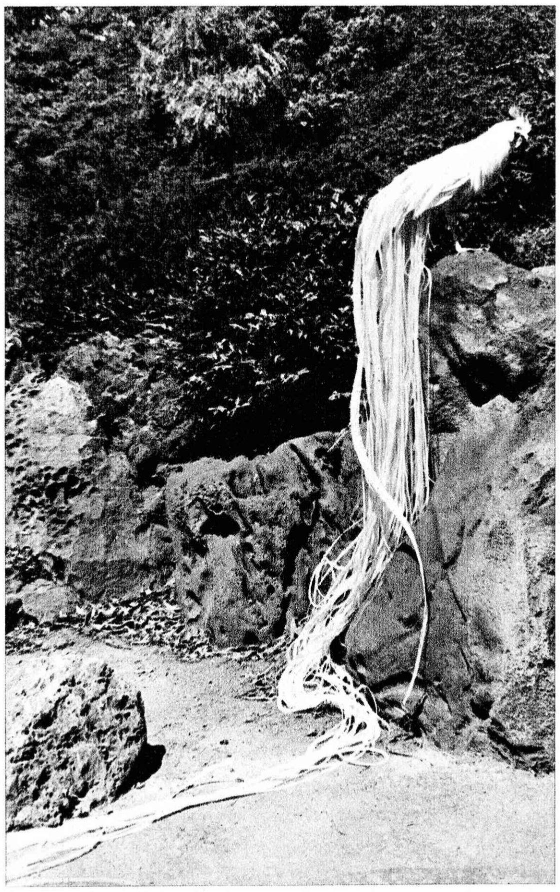
Japan has a traditional calendar, based on *"junishi,"* introduced from China in ancient times. Under this system, days, months and years are basically expressed by a cycle of 12 animals, such as mouse, ox, tiger and rabbit. This "animal calendar" has been widely accepted by the general public from olden times.

According to this calendar, 1969 is the Year of the Rooster. That is why the designs of New Year's cards and stamps for this year featured the rooster for the most part. And those celebrities born in the Year of the Rooster 12, 24 or 36 years ago have frequently appeared on TV as the Man of the Year or the Woman of the Year.

Apparently, cocks and hens already existed in Japan as far back as 2,000 years ago. Up to the Meiji Era, the Japanese had bred a large variety of pet fowls without parallels in the world. In recent times, poultry farming has become widespread to produce meat and eggs. On the other hand, the traditional raising of pet fowls has been on the wane, and measures have been taken to preserve them.

Thus far, 17 varieties of pet fowls have been designated as "natural monuments" under the Government's policy of protection. Especially famous among them is "Onagadori" (long-tailed cock), designated as a "special natural monument" in 1952 and also well known as "'Yokohama" abroad. It is the only Japanese fowl to receive such a special designation. Genetically, "Onagadori" enjoys world fame for its long tail. A characteristic of the cock is that its tail is free of annual molting and lengthens year after year. Some excellent "Onagadori" grow their tails to as long as eight meters.

Another famous pet fowl is "Totenko," considered the best among pet roosters which are appreciated for their long crowing. The crowing of the rooster sounds as "koke-kock-koo" (cock-a-doodle-doo) to the Japanese ear. And the longer the final "koo," the better. Excellent "Totenko" crows as long as 23 seconds in one breath. When crowing, this cock strikes a very imposing, lusty pose by erecting its body and extending its neck. Therefore, "Totenko" appears in many New Year's TV and radio programs as auspicious bird.



"Shamo," a unique cock originally imported from Southeast Asia in the 16th century, has been bred exclusively as fighting cock. Of sturdy build, it is fearless and highly bellicose. Even the medium-sized "Shamo," the most widespread variety, weighs as much as 4.5 kilograms. Photo: Onagadori with an eight-meter-long tail.

TECHNOLOGY

From Paper to Q-per

Natural fibers, such as silk and cotton, are being replaced with synthetic fibers, while the production of synthetic rubber is supplanting natural rubber. And the same thing is going to happen in the field of paper as well—to wit, the advance of synthetic fiber or "paper made from petroleum."

In a bid to save foreign exchange and cut costs, paper makers and chemical firms are now bent upon developing synthetic paper.

Synthetic paper is produced from such substances as ethylene, styrene and propylene, which are derived from naphtha, a remnant after the extraction of gasoline from crude oil. First, an extremely thin film only about 15 microns thick is made through polymerization. Then the surface of the film is processed to cause the diffused reflection of light so that it may look "white" like paper. This is done, for instance, by making the surface minutely rugged or attaching sand. Finally, the surface is thinly coated with pigment. In this process, the technique of making a thin film was most difficult in the study of industrial application. Recently, however, new techniques to overcome this difficulty have been developed one after another. Especially, the technique developed by the High Polymer Research Institute is unique in that a thin film is made through an inflating process by using steam—similar to inflating a balloon. The institute has already taken out patents for the technique in foreign countries, such as Britain and the United States.



Already, a certain paper manufacturer has put on the market new synthetic paper, called "Q-per," although production is still limited. In the English alphabet, Q comes next to P. Therefore, "Q-per" means what comes next to "P-aper" (that is, paper). Price is still about four times as high as that of conventional paper. But the new paper excels in printability and is also highly durable even when exposed to the elements. Accordingly, it is popular for use as posters, for instance. If production is expanded, the price can possibly be cut to the competitive level compared with conventional paper.

Synthetic paper is usable in a wide range of fields, such as for posters, calendars, for Japanese sliding doors, cards for electronic computers and corrugated paperboard.

The Science and Technology Agency predicts the advent of a synthetic paper age, saying that the ratio of synthetic paper to Japan's total paper consumption will be only about 2.4 per cent five years hence, but will soar to 16 per cent 10 years from now. Photo: Various products made of "Q-per."

ART

Treasure House of Oriental Art Completed

Recently, the Oriental Hall was completed in the compound of the National Museum in Ueno, Tokyo.

The construction of the new structure for displaying topnotch works of art gathered from the whole of Asia, excluding Japan, took three years and cost 1,700 million yen. Designed by Dr. Yoshiro Taniguchi, it is a three-story building rich in Japan's traditional beauty, incorporating the palace style of the Heian Period.



For indoor illumination, recently developed natural-white fluorescent lamps are used to convey the delicate color tones of art objects faithfully. Moreover, a special device for removing sulphurous acid gas has been installed to protect the works of art from contaminated urban air.

In addition, the new hall has "audio guides" (earphone-type device for explaining the exhibits) in two languages. A television watch system will be installed shortly throughout the building.

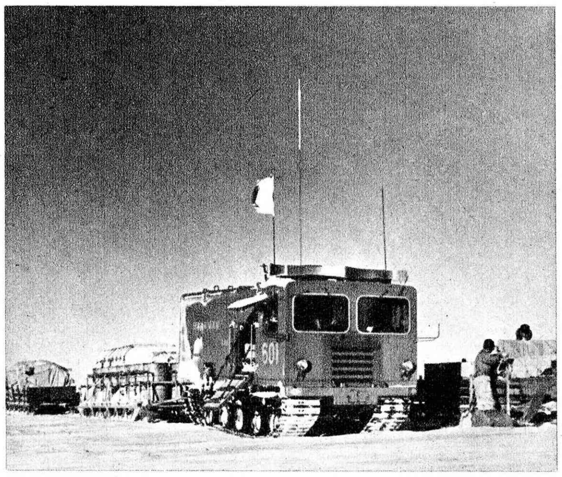
The art objects of the new hall are displayed systematically, ranging from the representative works of Egypt and Southwest Asia in the comprehensive exhibition room on the first floor to Chinese works of art on the second and third floors and then, works of art from Korea and remote areas west of China, and folk art objects of the South Pacific on the fourth floor. The new museum of Oriental art not only is the largest of its kind in the Orient, but also ranks among the best in the world. Photo: Inside of the Oriental Hall.

SCIENCE

Japanese Team Reaches South Pole

An 11-member Antarctic traverse team of Japan, led by Masami Murayama, reached the geographical South Pole at 2 p.m. December 19 (local time) last year after an 80-day, 2,500-kilometer overland trek. The group left Japan's Showa Base on Ongul Island on four snowcars and 14 sleighs last September 28 and proceeded due southward while repeating scientific observations and measurements regarding nine subjects—namely, location, altitude, weather, topography, geology, snow and ice, ice thickness, terrestrial magnetism, natural electric waves and polar medicine. Overcoming various adverse conditions in minus 60-degree C. temperature, the team finally arrived at the United States Amundsen-Scott Station at the geographical South Pole on the 83rd day after departing from the Japanese Antarctic base on Ongul Island.

The Murayama team was the eighth to complete an overland trip to the South Pole. The first successful trip to the southern extremity of the earth was made in 1911 by the Amundsen expedition, followed by the Scott team in



the following year. The route taken by the Murayama team was the longest ever to be followed by an Antarctic expedition, enabling the Japanese team to make a scientific probe into the hitherto unexplored areas of the White Continent for the first time.

The Murayama team left the South Pole on a return trip to the Showa Base on December 24 after resting at the U.S. Amundsen-Scott Station for five days. Photo: The Japanese team treks ahead through the White Continent.

INDUSTRY

Japan's Piano Industry Approaching No. 1 Position

Japan's fast growing piano industry is only a hair's breadth behind its American counterpart, which now holds the No. 1 position in the world. The nation's piano production last year, as recently announced by the Japanese musical instrument industry (partly including estimates), totaled 195,826 units or not far below the estimated American output of 220,000 units. Of the total, exports accounted for 37,526 units (valued at about 15 million dollars) or up 46 per cent over the previous year.

Over the past decade, Japan's piano production has been growing at annual pace of 10 per cent with no major fluctuations, either upward or downward. This is an unusual phenomenon in the category of durable consumer goods, which are liable to sharp fluctuations.

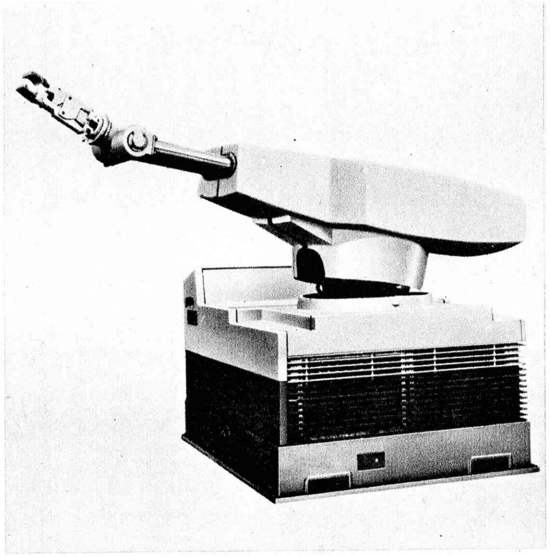
For years, Japanese piano makers have been expanding a really ingenious project to evoke demand for this musical instrument.

This is called "music class." Under the project, a group of 10 to 20 children is formed in each area for piano lessons. The idea has caught on wonderfully with the support of mothers. At present, there are about 10,000 "music classes" with a total enrolment of well over 400,000 children throughout the country. This, the makers say, is not a paying enterprise, but piano lessons thus given are bound to result in fresh demands for pianos in the not distant future. Furthermore, an easy consumer credit system, set up by piano makers in cooperation with banks, has apparently contributed to expanding demand for pianos.

When Japan carried out the first set of measures for the liberalization of direct foreign capital investment in the Japanese industry in 1967, the piano was placed on a list of completely liberalized industries. In spite of an expected offensive of foreign capital, however, Japanese piano makers are determined never to resort to an undercutting tactic. At a time when Japanese-made pianos are often specified at international music festivals, Japanese piano manufacturers are prepared to expand their overseas markets with firm confidence in the quality of their products. Photo: Piano asembly plant in top gear.



Labor Shortage and Industrial Robot



Industrial robots are likely to come into the limelight as a new weapon to overcome a worsening shortage of labor. And this was amply evidenced recently when the Kawasaki Aircraft Co. announced a plan to manufacture and sell industrial robots, priced at 12 million yen, under technical tie-up with a major American maker. Within a week of the announcement, the company was deluged with more than 100 inquiries from prospective buyers.

The announced robot, standing about as high as a human adult, consists of a memorizing and control device, which corresponds to human brains, and an about one-meter-long manipulator capable of freely moving in all directions. Once the robot is made by hand to do a series of motions, it instantly memorizes these motions and repeats them. It can do as many as 180 different types of work with greater accuracy and efficiency than do any veteran human workers, the maker claims.

Industrial robots will be particularly useful in those fields marked by a repetition of monotonous work or unfavorable working conditions. In such fields, workers naturally show a greater tendency to quit than in other fields, causing an acute shortage of labor.

In the United States, it is said, there are already more than 200 industrial robots in operation. In Japan as well, there is no doubt that the use of robots will spread fast as a principal means of rationalizing production process and saving labor. At present, Japanese machinery makers are apparently vying hard in developing technology for industrial robots and other machines to replace human labor. Photo: Single manipulator robot announced by the Kawasaki Aircraft Co.

Japan's Auto Output to Exceed 5 Million Units This Year

Japan, the No. 2 automobile producer in the world, turned out more than four million units—a new record—last year and is likely to produce upward of five million units this year. Of last year's output, the Toyota Motor Co. accounted for 1,100,000 units and the Nissan Motor Co. 990,000 units, far outstripping other automakers as in the preceding years. And the "Big Two" automakers' margin of ascendancy is likely to widen further, it is said.

In recent months, Japan's automobile industry has been beset with rather harsh circumstances both at home and abroad, as instanced by the imposition of the automobile purchase tax in this country, signs of an offensive by foreign capital, including the Big Three of the United States—General Motors, Ford and Chrysler—and the strengthening of safety standards for motor vehicles. Japanese automakers believe that the basic trend of "motorization" in this country will make further progress in the years ahead. But the opinion is certainly growing among them that the era of "cars selling like hot cakes as soon as they are made" is now coming to a close. This is evident from a cautious attitude as reflected in their production plans for this year.

Toyota Motor plans to turn out 1,300,000 units this year and Nissan Motor 1,260,000 units. Among other makers, Toyo Kogyo Co. has set its production target at 520,000 units and Mitsubishi Heavy Industries Ltd. at 450,000 units. And Japan's total automobile output for this year is estimated to reach the 5,100,000-unit level.

This year's production programs are particularly marked by the aggressive attitude of Toyota Motor and Nissan Motor. For the "Big Two" makers are confident of sharply expanding their overseas sales—by 30 per cent in the case of Toyota and 40 per cent as regards Nissan.

If their production goals are attained, the domestic market shares of Toyota and Nissan will climb to 35 and 40 per cent, respectively, further adding to their supremacy over other automakers.

BUSINESS

Electronic Computer Specialists in Great Demand

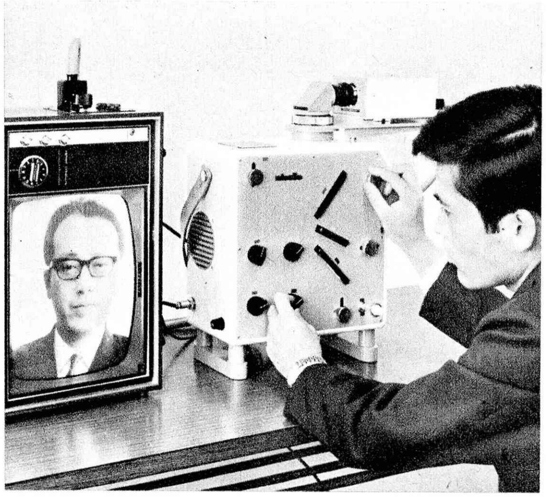
A certain organization concerned with electronic computers recently held course on the basic knowledge for using computers and invited applications. Partly because of the low tuition fee, there were as many as 1,500 applicants, although the sponsor was ready to admit only 70 trainees. As a result, the sponsor had a difficult time selecting trainees from among so many. This obviously reflects an acute shortage of computer specialists with the fast spread of electronic computers, which is bringing such rapid progress in the so-called "information revolution."

Information processing specialists are classified into various categories ranging from those with highly specialized knowledge to mere skilled operators—for instance, system engineers (high-class specialists), programmers (middle-class), operators and key punchers. Among them, system engineers decide what type of computer should be used and where, while programmers work out a process of calculation and business handling for electronic computers in conformity with a design drawn up by the system engineers. And it is impossible to train these specialists in a short period.

In these circumstances, universities, the Education Ministry, and the Ministry of International Trade and Industry as well as electronic computer makers bent upon increasing sales have set up special classes and seminars for specialists. But firms which cannot afford to wait have set about luring specialists from other companies. Some specialists of Japanese firms have been won over by affiliates of foreign companies, which have offered them more than double the usual salaries. In other cases, engineers sent by makers to their customers to give guidance have ended up in being employed by the latter, which have also used high salaries as a lure. For the time being, therefore, computer specialists in Japan will continue to be treated as "valuables."

NEW PRODUCTS

Photo Montage Composing Machine Developed



A new device for composing a photo montage—a key weapon for tracking down criminals—has recently made its debut. Manufactured by the Minolta Camera Co., it is called the "Photo Montage Composing Apparatus," and the Metropolitan Police Department and prefectural police headquarters have decided to adopt it.

Thus far, a photo montage has been made by cutting out appropriate portions of pictures preserved by the police, pasting them together and retouching a picture thus obtained. But this process takes not only a long time, but also considerable skill.

The new device (photo) developed by Minolta Camera composes portions of four different photos into a single picture, which appears on the screen of a monitoring television set. Negatives are also soon available.

According to the maker, the new device has a number of advantages. First, the color tones and sizes of different pictures for montage composition can be adjusted freely, eliminating the need for duplication or extra printing prior to the actual process of composing a montage. Secondly, the new composing process results in few discernible seams. This makes retouching unnecessary. It is, therefore, possible to produce a complicated composite picture. Thirdly, the device cuts down the operator's work, since he can compose a photo montage while looking at the image on the TV screen. Fourthly, the device, being small and light (only 20 kilograms), can be carried in a patrol car. Fifthly, it can be used at a bright place.

The new equipment can also be used for automobile designing, fashion designing, plastic surgery, house designing and other purposes. It sells for 550,000 yen per set in Japan.

Desk-top Calculator That Can Be Put in Palm of Hand

The Hayakawa Electric Co., a top Japanese maker of desk-top calculators, has recently completed the first experimental model of electronic desk calculator using 11 LSI's (Large-Scale Integration) alone for its circuits —that is, the first all-LSI computer in the world (ptoto).

An LSI is an integrated circuit of high density, which does the same amount of work as 56 MOS-type IC's (integrated circuits) or 400 MOS transistors. The use of LSI's has reduced the size of the new electronic calculator to such an extent that it can be held in the palm of the hand. It measures only 22 x 16 x 7 centimeters and weighs merely 1.7 kilograms. But performance has been markedly improved. It is capable of doing the four operations up to eight units in only 0.6 second.

The new desk calculator will probably be put on the market around March. The price is expected to be less than 150,000 yen. The power consumption of the tiny computer is 4.5 watts, and home power source can be used. But Hayakawa Electric plans to market a portable battery-type, cordless model, which can be carried in a coat pocket.



Kabuto-cho: Japan's



Photos by
Masamichi Sumiyoshi

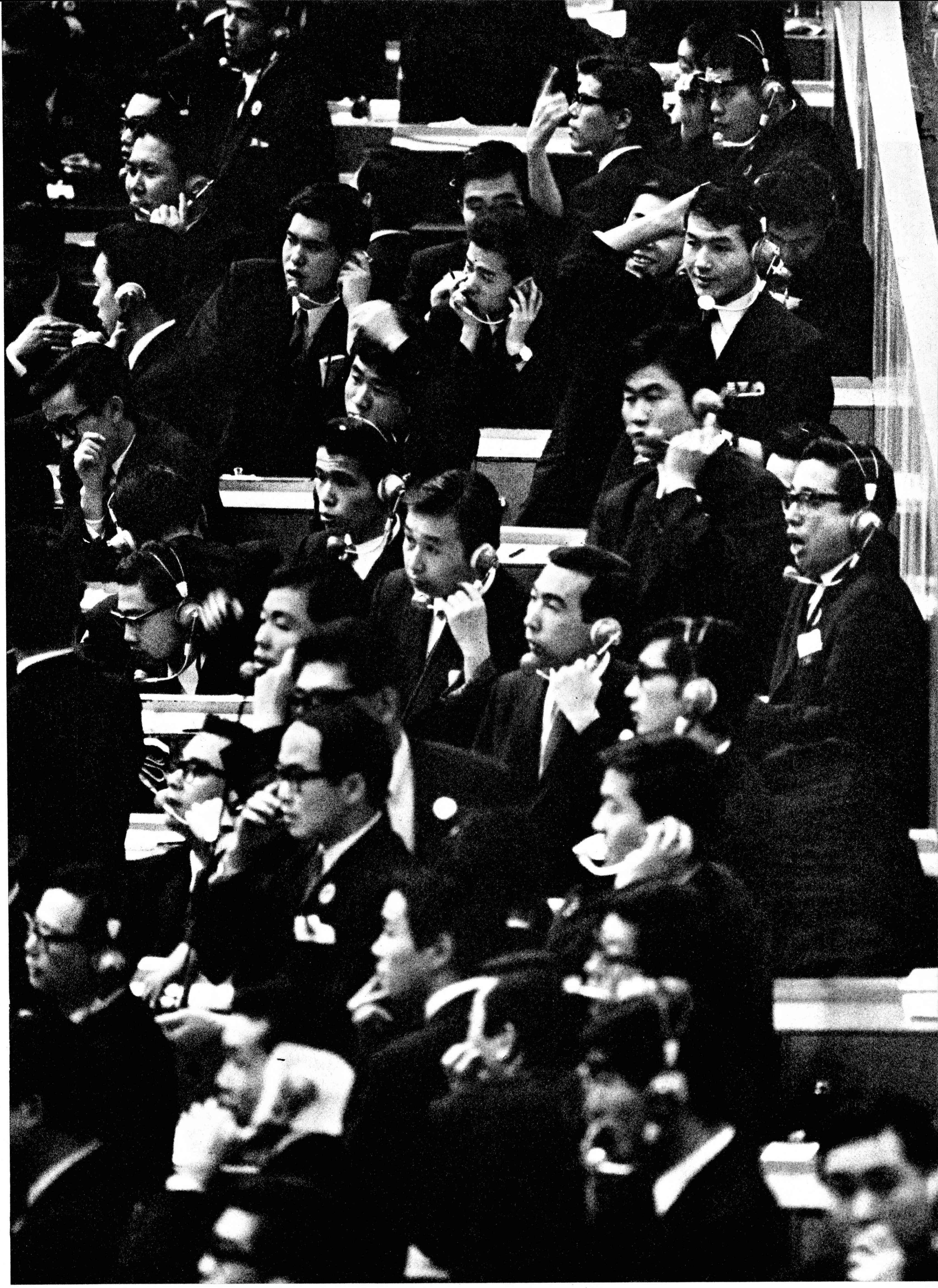
Wall Street

The Tokyo Stock Exchange is the veritable nerve center of Kabuto-cho. The photo shows the spacious trading floor of its First Section, which looks like a gymnasium. Active on the floor are more than 1,600 persons, such as floor representatives, telephone clerks and exchange staff. The trading floor is bustling every day with lively transactions, reflecting the growth of Japanese economy.





At the posts for popular stocks, exchange staffers of brokerage firms gather in large numbers to conduct intense transactions. One can promptly tell what stocks are popular, by simply looking at the flow of persons on the trading floor. The members of the exchange staff are for the most part in their twenties, since physical strength and quick judgment are required for floor transactions.



Telephone clerks on the trading floor of the First Section. On both sides of the floor are a total of 342 exclusive telephones linked directly with the offices of brokerage firms. Buying and selling orders constantly arrive by these telephones from the offices, while the results of transactions, based on the orders, and the trends of stock quotations are reported to the offices without delay.

Foreign Stock Buying in Japan Increases Sharply

KABUTO-CHO—or Kabuto-cho, Nihonbashi, Chuo-ku, Tokyo, to be more exact—is practically synonymous with Japan's stock market and securities industry as a whole. Often likened to the Wall Street of New York, the area teems with stock brokers offices, large and small, surrounding the Tokyo Stock Exchange.

At present, Japan has securities exchanges in eight large cities—Osaka, Nagoya, Kyoto, Hiroshima, Fukuoka, Niigata and Sapporo besides Tokyo. Such companies number 277, of which 83 are registered as members of the Tokyo Stock Exchange. They range from the so-called "Big Four"—Nomura, Nikko, Daiwa and Yamaichi capitalized at 8,000 million to 12,300 million yen—to small firms capitalized at around 100 million yen.

A total of 1,241 companies are listed on the Tokyo Stock Exchange. These comprise 680 companies in the First Section (consisting of major firms satisfying certain requirements concerning capitalization—1,000 million yen or more—, number of shareholders, distribution of shares, etc.) and 561 companies in the Second Section (capitalized at less than 1,000 million yen). They cover almost all Japanese corporations of established distinction, to say nothing of topnotch enterprises. At the stock exchange, transactions take place not only in stocks but also in public and private bonds, such as national bonds, Government-guaranteed bonds, corporate debentures and "telephone debentures" (which telephone subscribers are required to buy). But bonds and debentures account for only less than one per cent of the total value of transactions, as compared with stocks. Stock transactions at the exchange amount to about 127,500,000 shares worth some 29,000 million yen on the daily average, accounting for more than 70 per cent of the total value of such transactions at the nation's eight securities exchanges. A marked progress in telegraphic and telephone communications has caused stock orders to concentrate in Tokyo.

Last year when the Japanese economy enjoyed a great boom, the Tokyo Stock Exchange also witnessed ebullient transactions with the average daily volume exceeding 150 million shares for seven consecutive months from April to October. Especially in September, the daily average shot up to 237,620,000 shares.

Such a trend in transactions clearly indicates that Japan's stock market last year enjoyed an unprecedented boom. The burst of stock investment fervor was touched off by an "inflation hedge" mood arising from a gold rush mainly in London and Paris in mid-March, followed by an international monetary instability. The average stock price index, based on 225 main stocks, stood at about 1,270 points at the start of last year. But it climbed to the 1,500 level on May 20. After that, the upswing of the stock market steadily gathered momentum under the impetus of a series of favorable factors, such as a sustained upsurge of the Japanese economy, booming exports, relaxation of a credit squeeze, and improvement in corporate business records. The stock price index took about 70 days to rise from 1,500 to 1,600 points at the end of July. Yet it took only one month to soar from 1,600 to 1,700 points as of August 31. And on September 20, or only 20 days later, the index shot up to 1,800 points. On September 30, the previous record of 1,829.70, set on July 18, 1961 was finally surpassed for the first time in seven years and two months. And on October 2, the stock market chalked up an all-time record of 1,851.49 points. This marked the first time that stock prices had skyrocketed by as much as 45 per cent in a little more than nine months since the beginning of a year.

With the volume of transactions on the steep rise, brokerage firms' earnings of commissions also zoomed. Since the broker's fee, though only about one yen per share on the average, is charged to both sellers and buyers, a huge daily average of about 470 million yen went into the coffers of securities firms in September. From October, the stock price index tended to fall in reaction to the steep upswing and came down to around 1,700 points in December. But all securities firms chalked up tremendous profits in their business reports, and their year-end bonus payments to their employes set an all-time record, far surpassing those of other industries.

What kind of stocks were big gainers in the stock market boom last year? Internationally, Japan is known to have a marvelous economic viability comparable to that of West Germany. Keen attention, therefore, focussed on Japanese corporations noted for their strong competitive position on the world market—for instance, manufacturers of electronic computers, color television receivers, transistorized radios, refrigerators, and other electric and electronic appliances, such as Matsushita Electric Industrial Co., Sony Corp., Fujitsu Limited and Nippon Electric Co.; automobile makers, including Toyota Motor Co. and Nissan Motor Co.; heavy machinery makers, such as Hitachi, Ltd. and Tokyo Shibaura Electric Co. (Toshiba); and Canon Camera Co., Inc., Ricoh Co. and other camera and office equipment manufacturers.

Besides, a general upsurge marked the stocks of companies benefiting largely from brisk domestic economy, such as construction firms engaged in road and harbor improvement and construction of houses and buildings; and machinery manufacturers favored by active investments in plants and equipment. Those stocks which scored particularly big gains included the Ricoh Co., which recorded brisk sales of electronic copying machines and other business machines. Its stock price, standing at 70 yen in January, jumped nearly six-fold to 415 yen in September. Among other outstanding gainers were Fujitsu Limited, a major maker of electronic and communications apparatus, which chalked up an increase of slightly more than five times from 104 yen in January to 538 yen in November; and Daiwa House Industry Co., a leading maker of prefabricated houses, which also registered a more than five-fold jump from 143 yen in January to 789 yen in December. As for internationally renowned companies, Sony Corp. soared from 654 yen in January to 1,380 yen in December, while Matsushita Electric Industrial Co. climbed from 284 yen in January to 492 yen in November; Tokio Marine and Fire Insurance Co. from 135 yen in January to 236 yen in October; and Nippon Yusen K.K. (N.Y.K. Line) from 79 yen in March to 193 yen in November.

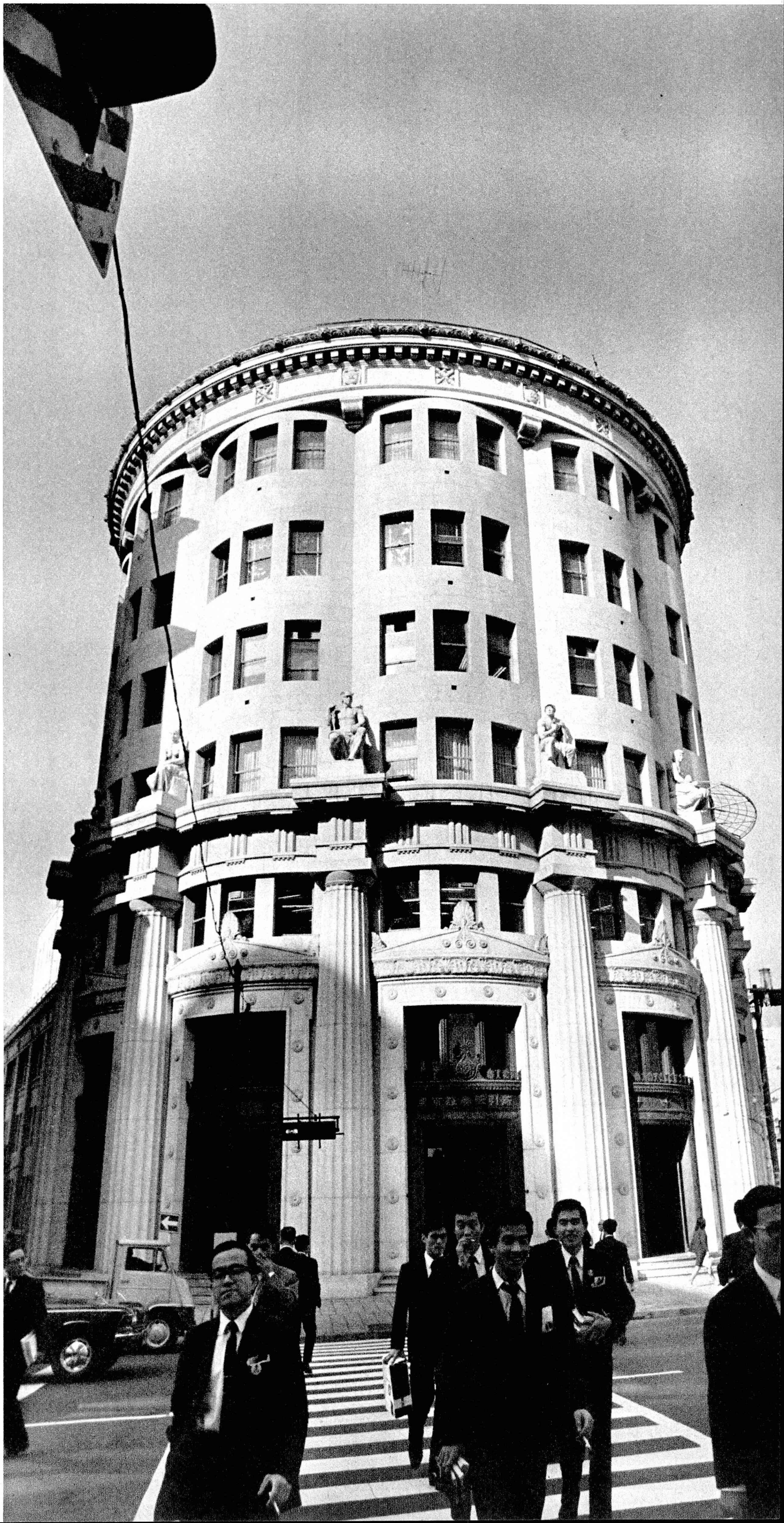
THE issue price of most Japanese stocks is 50 yen per share. Usually, stocks are bought and sold in blocks of one thousand as a matter of principle. The world-renowned Sony Corp. is quoted at as high as 1,380 yen as against the issue price of 50 yen. By contrast, the stock price movement of Japan's representative steelmakers, such as Yawata Iron & Steel Co. and Fuji Iron & Steel Co., is rather slow because of their huge capitalization, which means tremendous numbers of shares in circulation. Therefore, their stocks are not very popular, lingering at low levels of 50 to 60 yen. But the giant steelmakers pay 10 per cent dividends a year, making their stocks a good by from the viewpoint of yield. In Japan, the price of 50 to 60 yen is about equal to that of a pack of cigarets. Though stocks are bought and sold in blocks of one thousand, this means an investment unit of only 50,000 to 60,000 yen. The same

is more or less true of other giant makers such as Hitachi, Ltd. and Toshiba.

It may be termed only natural, therefore, that American and Europeans have recently stepped up their investments in Japanese stocks. In a short span of four months from April to July last year, foreigners bought about 140 million dollars worth of Japanese stocks through brokers. This far exceeded the past annual record of 126 million dollars set in fiscal 1967 (April 1967 through March 1968). The total for fiscal 1968 (ending in March this year) is expected to top the 300 million dollar mark.

Meanwhile, a number of investment trusts specializing in Japanese stocks have been set up abroad, including the Japan Fund, the Anglo-Nippon Fund (merged into the Foreign and Colonial in 1967), and Japon-Investissements. Last year, new overseas investment trusts for Japanese stocks were established one after another, such as the Nippon Fund, organized by Britain's Vickers da Costa Co. in August, the Japan Selection Fund, set up by West Germany's Formula Selection Incorporated in September, and the Tokyo Fund sponsored by Private Bank of Switzerland and other firms. In addition, three similar funds are said to be in the making—two in Britain and one in Switzerland. In this way, a Japanese stock boom in Europe is really impressive.

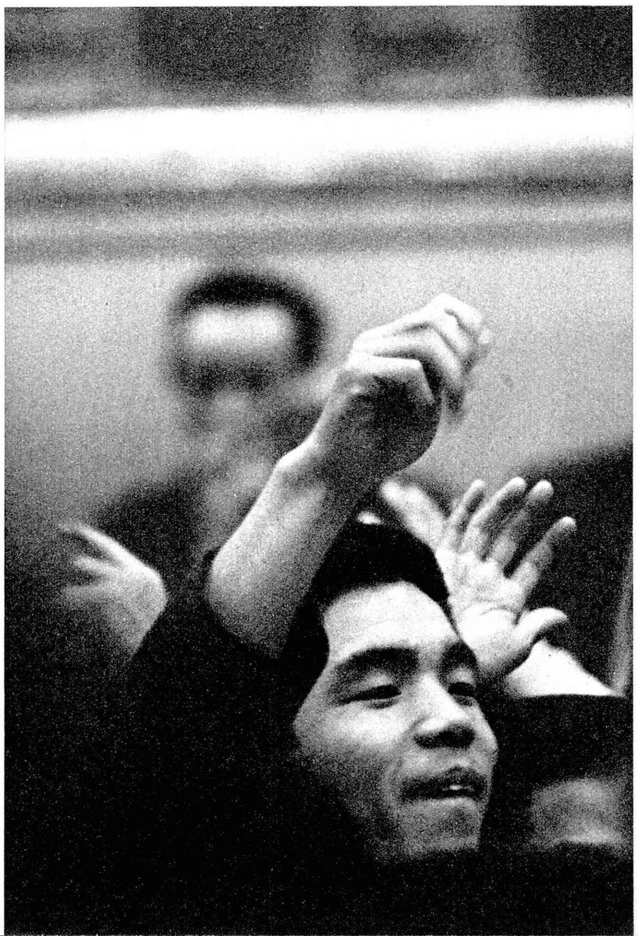
In anticipation of a vast increase in the volume of transactions and attendant business in the future, the Tokyo Stock Exchange is planning to set up a direct link between the market and the investor via the brokerage firm. Upon completion of the system, scheduled in three years, investors throughout the country will be able to buy or sell at limit by telephone, television or transmitting equipment at brokerage firms. In other words, this will enable the investor to know the movement of stock prices while relaxing in the sitting room of his home. Namely, the stock market will virtually conduct transactions in full view of the investing public. The plan to mechanize market transactions after the pattern of the New York Exchange has been mapped out on the basis of findings by a survey team, dispatched to the United States in June last year. This is expected to cost 3,000 million to 4,000 million yen. Since the mechanization project is likely to stimulate a reorganization of the existing eight securities exchanges and affect the business of medium and small-scale brokerage firms to no small extent, dissatisfaction has been voiced by many persons concerned. Therefore, keen attention is being focussed on how the project will be carried out.

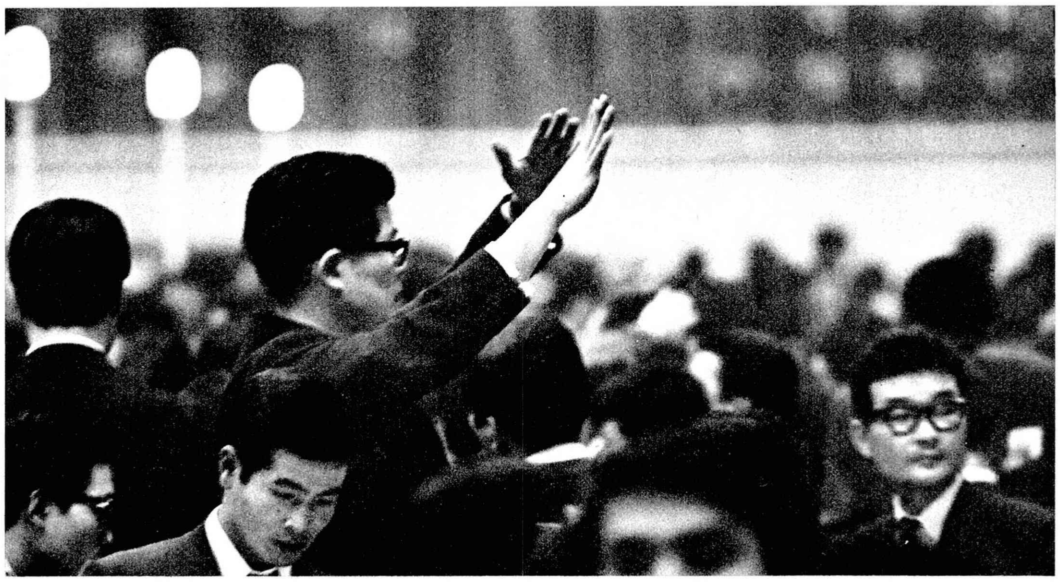


The front view of the Tokyo Stock Exchange, the center of Japan's stock transactions. It is surrounded by upward of 100 brokerage firms.







In floor transactions, the volume and price of shares are indicated by the fingers of both hands. The seller raises their hands with the palms turned outward, and the buyer inward. The left hand indicates 10 yen or up to nine multiples of 10 yen, and the right hand one to nine yen. Individual stocks are also indicated by hand signal. For instance, when the hand is waved, it means the Nippon Yusen Kaisha (N.Y.K. Line), a leading shipping firm.




The left photo shows the office of a certain securities company in Kabuto-cho. Rows of telephones are directly linked with those in the Tokyo Stock Exchange and the company's branch offices. The photo below is the counter of a brokerage firm's service station. Of late, growing numbers of people at large have come to invest in stocks, and young women visiting service stations are no longer a rare sight.



IMPERIAL PALACE:
COMBINATION OF MOATS AND



The present-day Imperial Palace occupies the former site of the Edo Castle. On the occasion of the Meiji Restoration, Emperor Meiji moved from Kyoto to Edo (now Tokyo) in October 1868 and took up his residence at the Edo Castle, until then the head-quarters of the Tokugawa Shogunate. Deep moats and more than 30-meter-high stone walls not only provided perfect defense against enemy attack, but also served as symbols of power. Stones seem to have been stacked up at random. But the stone walls are so sturdily constructed that the rocks were not once shaken out of position even by big earthquakes, including the famed Great Kanto Earthquake. A small bridge in the photo was a drawbridge, designed to be pulled up with chains in case of emergency.

Photos by Nobuaki Fukui

STONE WALLS

Moats, stone walls and abundant verdure—the Imperial Palace forms a world of its own right in the midst of the over-congested Metropolis Tokyo. The castle, already four centuries old, still retains its ancient atmosphere, which has endeared itself to many people. In a modernized Japan of today, it is still alive, enthralling the Tokyoites by its age-old beauty.





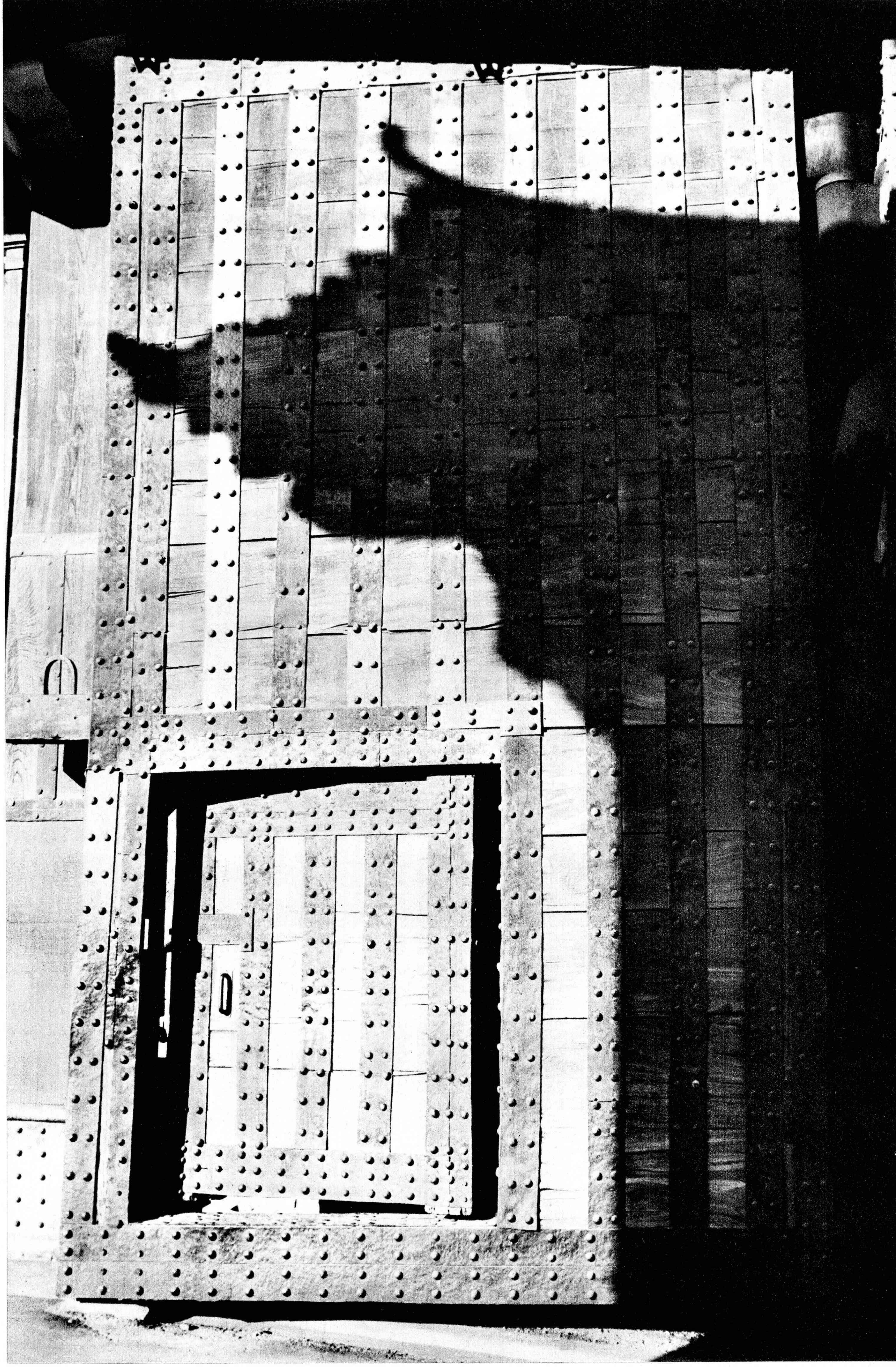
Fushimi Yagura (turret), used as storehouse of weapons and watch-tower. The new palace has been built to the right of this tower.



The stone walls of the Palace exude a unique atmosphere of tranquility and composure that can be created only by an age-old history.

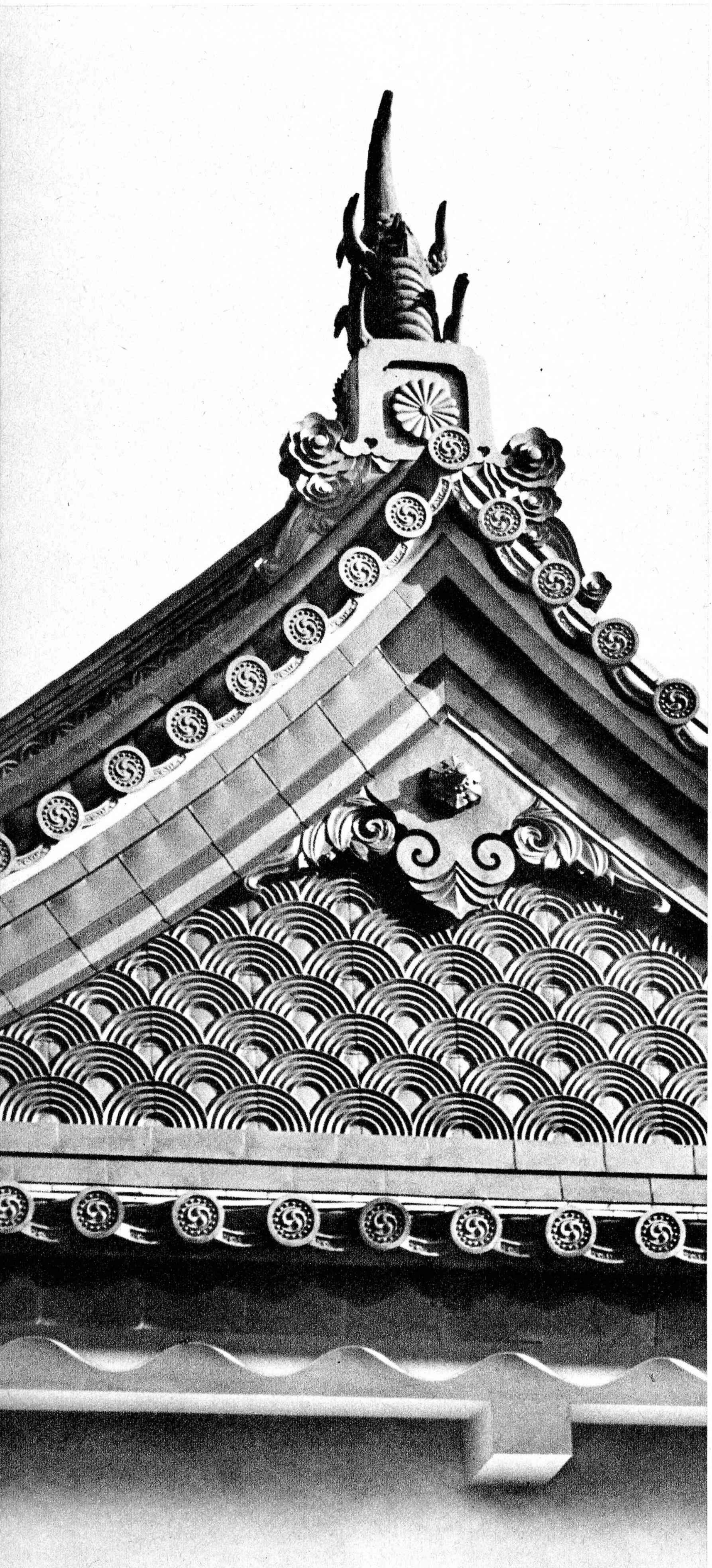


Tatsumi Yagura (turret), which was used both as depository of guns and bows, and watchtower. It has loopholes for shooting at the attacking enemy in case of war. But not once did the Edo Castle become a scene of actual battle throughout its history.



The door of the Otemon gate, impressively made of giant timbers joined together. Usually, only the small door at the lower left-hand corner was used, and the main door was opened when important personages passed.

Seen on the top of the roof in this closeup photo is the Imperial crest—16-petaled chrysanthemum.





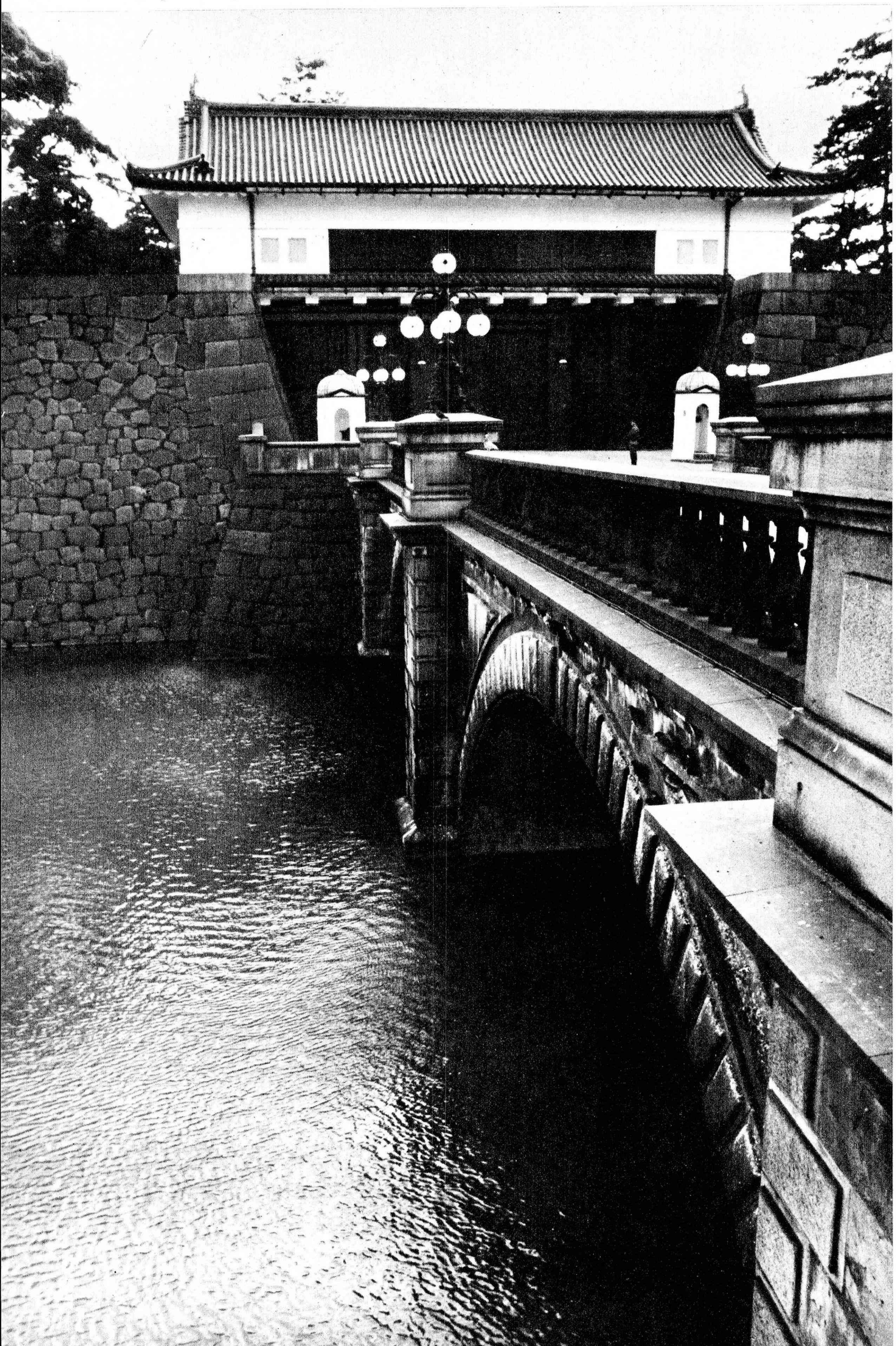
The Edo Castle was the biggest ever to be built in Japan, and its 16-kilometer circumference was surrounded by moats and stone walls. Standing in the right foreground of the photo is the Otemon, the main gate of the Edo Castle. The two-story turret seen at left is the Tatsumi Yagura (see Page 20). The verdure of pine trees, stone walls and white walls, reflected in the water of moats—this is one of the most fascinating sceneries in Tokyo and Japan.



IMPERIAL PALACE CATCHES

Text by SUKEMASA IRIE   Vice Grand Chamberlain

Double Bridge and front gate of the Imperial Palace. The Emperor's guests enter by this bridge and gate.



THE Imperial Palace, needless to say, is located on the site of the former Edo Castle. All but a few of the ancient castle structures were burned down or have otherwise disappeared. But the contours of the castle site, as formed by moats and stone walls, for instance, have undergone little change since the 16th century. Even so, the present site of the Imperial Palace represents only what used to be a small central section of the fabulously large Edo Castle. Still, it covers an area of as much as one million square meters.

The offices of the Tokugawa Shogunate Government were not reconstructed after being burned down in the great fire of 1862. Therefore, few structures remained in the "Honmaru" section (inner citadel). When the Imperial Court moved from Kyoto to Tokyo in the 1st Year of Meiji (1868), Emperor Meiji took up his residence at the "Nishi-no-maru" (western citadel) of the Edo Castle, where a successor to the Tokugawa Shogun had lived. But this palace was also burned down by a fire arising from a leakage of electricity in 1873. A new palace, called Meiji Palace, was built in 1889 and served for both official functions and the Imperial residence for three eras—Meiji, Taisho and Showa. The Meiji Palace, destroyed in an air raid in May 1945, represented a blending of Japanese, Chinese and Western architectures. But it was not a simple mixture, and yet there was full harmony among the three architectural styles.

The burnet-out site was left untended for a long time. Yet the Peace Treaty took effect in 1952 and Japan resumed formal relations with other nations, the area was made into a vast lawn. Then the third floor of the Imperial Household Agency's building was cleared and turned into a provisional palace through repainting, curtain changing and other refurbishing work, and the agency's offices on the third floor were shifted to the lower floors.

Needless to say, the provisional palace was not worthy of being called a "palace," since it was after all a refurbished office of the Imperial Household Agency with low ceilings and small rooms, despite repeated face-lifting work. Nevertheless, all manner of state functions were held there, such as the audiences for state guests, presentation of credentials by ambassadors, conferment of medals and state dinners.

UP WITH THE TIMES

Yet as Japan's postwar reconstruction progressed, moves mounted for the construction of a new Imperial palace. In 1953 or the year after the effectuation of the Peace Treaty, a basic survey was started, and in 1963 or 10 years later, a basic design of the new palace was completed. Construction work began in the following year and was finally completed in 1968. The work was undertaken by a joint team of Japan's five leading construction firms, employing a total of 720,000 workers.

Almost all construction materials were procured in this country, while the techniques used were purely Japanese. Palace planners say they just sought to embody today's Japan through the new palace without either pursuing the old or seeking the possibilities of the future.

We can find indications of Japan's architectural standards everywhere. A typical example is green rust covering the surface of bronze roofs. Until about 30 years ago, bronze roofs had naturally formed beautiful green rust with the passage of time. In big cities of today like Tokyo, however, the air is so polluted that bronze roofs get just blackened instead of forming such attractive rust. Therefore, a new technique was developed for artificially forming green rust on the roofs of the new palace. This technique, it is said, is already attracting keen attention and, I am told, is but one example of many new techniques developed during the construction of the new Imperial Palace.

For three days—November 24, 25 and 26—immediately after the completion of the new palace, the general public was allowed to enter the palace grounds to view the new buildings. People entered by the main gate, crossed the Double Bridge and passed through the garden in front of the new palace. Although they could not enter the palace for a firsthand look at details, about 100,000 persons gathered and filed into the palace grounds every day. The huge crowd even stalled motor traffic near the Imperial Palace.

AT the former "Hon-maru" sector of the Edo Castle, there are only buildings for the Musical Department in charge of court music and the Book Department administering the Imperial Library. And only a garden exists where the offices of the Tokugawa Shogunate once stood. In a corner of the stone walls, the "Fujimiyagura" (tower) retains its ancient form, but other remnants of the Shogunate days are limited to small structures, such as "Hyakunin-bansho" and "Doshin-bansho" (both guardhouses of the samurai). And this garden has been opened to the public since early last October. Now everybody is free to enter the garden by three gates with visitors numbering 8,000 to 10,000 every day.

Ancient castles were so designed as to prevent outside persons from entering. That is, the design of a castle was basically aimed at keeping out an enemy. Castles were surrounded by deep moats and stone walls as high as 30 meters. Bridges spanning the moats were so built as to be easily dropped into the water in case of emergency. Now, however, the Imperial Palace premises, where one of such castles existed in olden times, are required to accommodate as many people as possible.

SOME persons once argued that the existence of the giant Imperial Palace in the heart of Tokyo worsened its traffic congestion. But since Edo Castle is designated as a cultural property of the nation, it is prohibited to destroy its gates or change the shape of the stone walls. Experts contend, moreover, that the construction of one or two highways through the Imperial Palace grounds cannot resolve Tokyo's traffic difficulty, for the congestion is not so light as to be simply cured by such measure.

Be that as it may, Edo Castle was one of Japan's representative fortresses. It is considered far better to utilize vast vacant areas in the palace premises as resting places for the citizens than to destroy part of the grounds for construction of highways. That is probably why a section of the palace premises has now been opened to the public. Considering the newly opened garden is visited by a constant stream of people every day, I think this has, after all, been better than the construction of roads through the palace grounds.

Stones covering the banks of the moats are for the most part from the Izu district, although part of are granites of Mikage, Hyogo Prefecture, and Shodo Island, Kagawa Prefecture. When Edo Castle was built, the area where Tokyo Station now stands was still under the sea. And there was a beach where the Yaesu Entrance to the station is now located. Near the Musical Department in the palace compound is "Shiomizaka" (literally, slope looking to the tide). When one stands on this slope, one can command a panoramic view of office buildings in the Marunouchi district. And the name derived from the fact that the area used to be the sea in ancient times. Therefore, stones transported from the Kansai and Izu regions by sea were landed on the beach where Tokyo Station is now situated. After that, the stones must have been brought to the castle construction site by ox or horse carts.

At first glance, these stones appear piled up irregularly. Yet they remained firmly unshaken even by a big earthquake of the Ansei Era and the Great Kanto Earthquake of 1923. These stones, which have witnessed vicissitudes of Japanese history, such as the collapse of the Tokugawa Shogunate, the Meiji Restoration and the Pacific War, still stand as quietly as ever, facing the moats with a mystic look. From time to time, I gently stroke the surface of the stones. When they are basking in the sun, I enjoy the slight warmness of the tranquil stones even on cold winter days.

The Imperial Palace and vicinity have endeared themselves to many a person as one of the most charming scenes in Japan. Every autumn, the banks of the palace moat from the Hanzomon Gate to Miyakezaka become ablaze with the flowers of Lycoris Radiate. Last year, by some mistake workers started plucking them. Immediately, a telephone call to the Imperial Household Agency demanded a halt. Surprised, I promptly ordered the flower picking suspended. This episode shows the flowers now belong to all the citizens of Tokyo.

On cold days when the sea is rough, thousands of seagulls invariably flock to the palace grounds. And people with cameras at the ready stand all day across the moat to take pictures of the birds. The newly completed Imperial Palace has added a fresh landmark to Tokyo. On this occasion, I consider it necessary to have as many people as possible visit the palace so that they may experience a feeling of familiarity inside the precincts.

The site of the old castle, built four centuries ago, still preserves its original form, endearing itself to numerous people of today with its splendid scenery. Thus it still lives and functions. An intriguing thing about the old castle is that it is old, but still alive.



The Emperor plays "shogi" (Japanese chess) with his grandson Prince Hiro as the rest of his family looks on, in a recent photo released by the Imperial Household Agency. From left: Princess Hitachi, the Emperor, the Crown Prince, Prince Aya, the Empress, Prince Hiro and Prince Hitachi. Princess Michiko who is expecting a baby is not in the picture.



JOYOUS 1969 SEEN FOR IMPERIAL FAMILY

The year 1969 promises to be a joyous and eventful year for members of the Imperial Family.

There will be a new addition to the family. The Emperor and Empress will move in April into the new palace, recently completed at a cost of ¥13,000 million.

The Crown Princess who will celebrate the 10th anniversary of marriage to the Crown Prince this year is expected to give birth to a third baby sometime in late April or early May. Her two sons are said to be elated over the prospect of a younger brother.

The Emperor will observe his 68th birthday on April 29. And the Empress will be 66 years old on March 6. Both are enjoying good health and are grateful to the nation for its united effort for the construction of the new palace.

They enjoy discussing plans for their new home. Imperial Household officials revealed that they have named their two living rooms "Kiku-no-ma" (Chrysanthemum Room) and "Kiri-no-ma" (Paulownia Room).

The Empress intends to display a painting she has painted herself in one of the rooms, it has been learned.

Aside from his official functions this year, the Emperor will devote most of his time to biological studies. He is also expected to have a new book published in April titled "Hydrozoa of Amakusa, Kyushu." Another book is planned on the topic of shells he collected from Sagami Bay.

The Empress, who is fond of painting, is now also engaged in the study of moss. She began moss observation a few years back having become influenced by her husband's enthusiasm in biology.

Last summer, she discovered a new variety of moss in the garden of the Imperial Villa at Nasu, Tochigi Prefecture.

Their Majesties are typical "good" grandparents for their eight grandchildren, including Prince Hiro and Prince Aya, sons of the Crown Prince and Princess. They are said to be good playmates for the little prince in shogi (Japanese chess).

Prince Hiro and Prince Aya run about the palace almost daily proclaiming, "we will soon be big brothers. A baby is coming."

Prince Hiro who is a third-grader at Gakushuin Primary School enjoys excellent health and engages in such sports as horse back riding, baseball and swimming. He achieved a perfect attendance record for the entire second term of the school year in 1968.

Last summer Prince Hiro started to show keen interest in drawing as well as in the appreciation of fine arts. He viewed a number of famous art exhibits in both Tokyo and the Kansai area during 1968.

Crown Prince Akihito is planning to announce his sixth paper concerning his studies of the goby in 1969. Meanwhile, Princess Michiko fully recovered from her recent illness, is expected to start taking care of her sons.

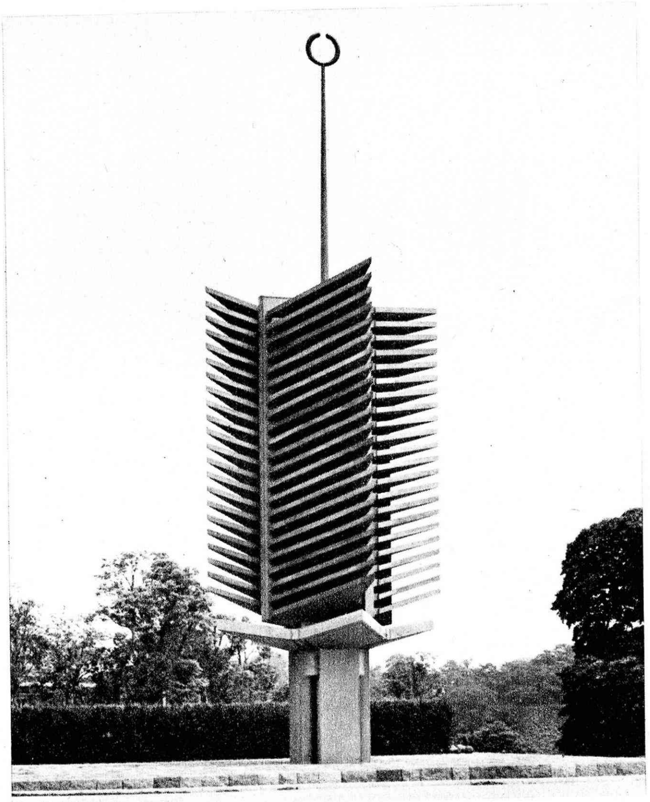
Prince and Princess Hitachi, who attended the centennial of Japanese emigration to Hawaii last June, are expected to take a more active part in social welfare work this year.

Prince Hitachi served both the posts of honorary president of the Bird Protection Association and the Crippled Children's Federation last year.

NEW IMPERIAL PALACE:

HARMONY OF TRADITION AND MODERNITY

The new Imperial Palace—a veritable concentration of modern technology and Japan's traditional architectural beauty—is really suitable as a new symbol of the Japanese nation. Its construction, completed in October last year, took more than four years and cost a total of 13,000 million yen. The best building materials, construction methods and fine arts available in the present-day Japan have been lavishly combined to erect the new palace with a total floor space of 23,000 square meters. "Familiarity rather than dignity, simplicity rather than solemnity" is the keynote of the new palace structure. It is truly a grand monument which the Japanese people of the 20th century can proudly leave to posterity.



Illuminating Tower. Made of 88 triangular bronze plates, the 16-meter structure is also called Young Pine Tree Tower. The ornament at its top is patterned after ladies' accessories of ancient times.



Shunju-no-Ma Hall of Chowaden. The 640-square-meter hall is the second largest after the Homeiden among the buildings of the new palace. It is to be used for receptions.



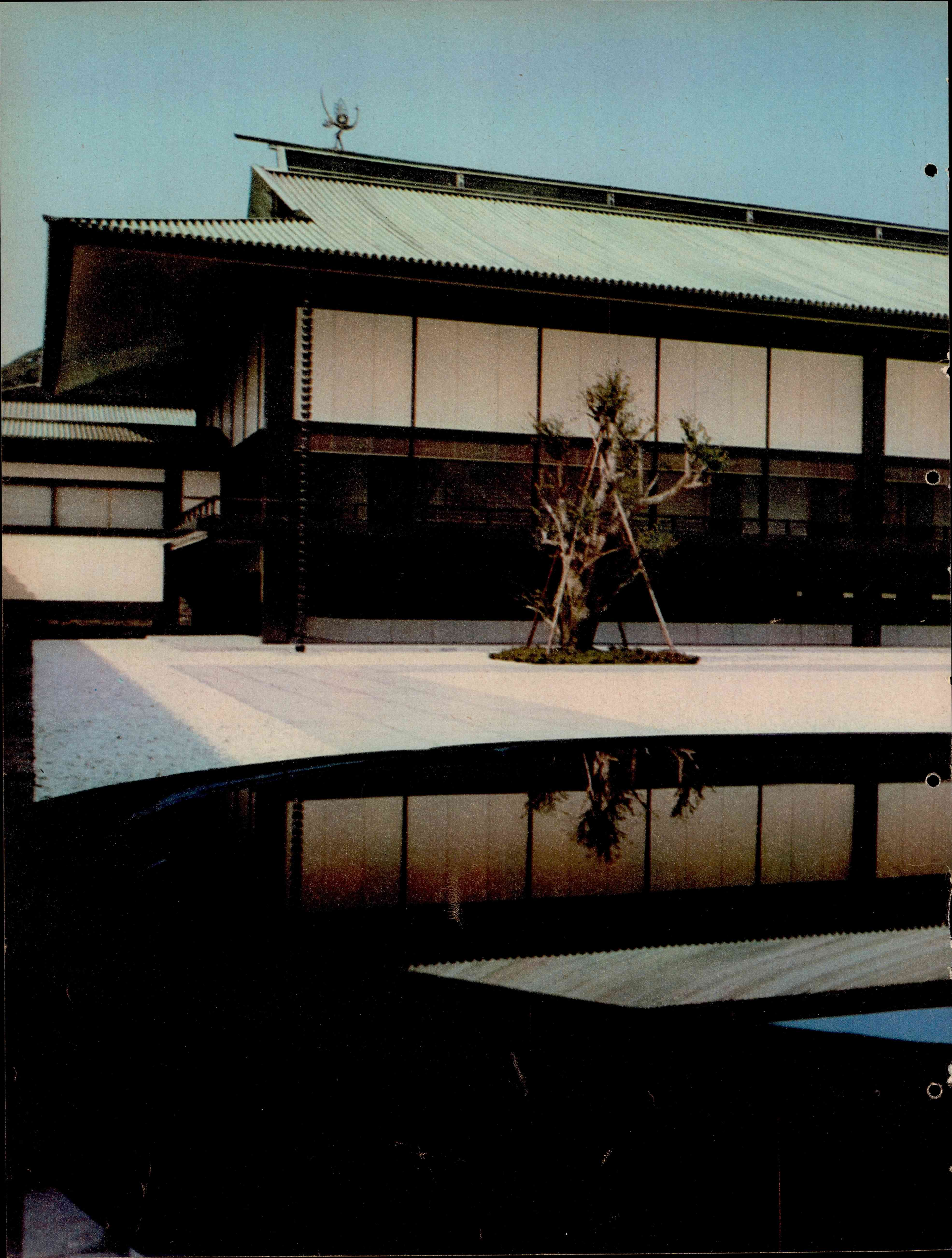


The structure at right is the Homeiden, and the one at left is the Seiden (State Chamber). What looks like a chain of bottomless buckets is gutter made of bronze, especially designed to have sufficient durability, carry off large amounts of rain water and present a beautiful appearance.



Entrance to the Takenoma (Bamboo Room) of the Seiden to be used as the Emperor's audience chamber.

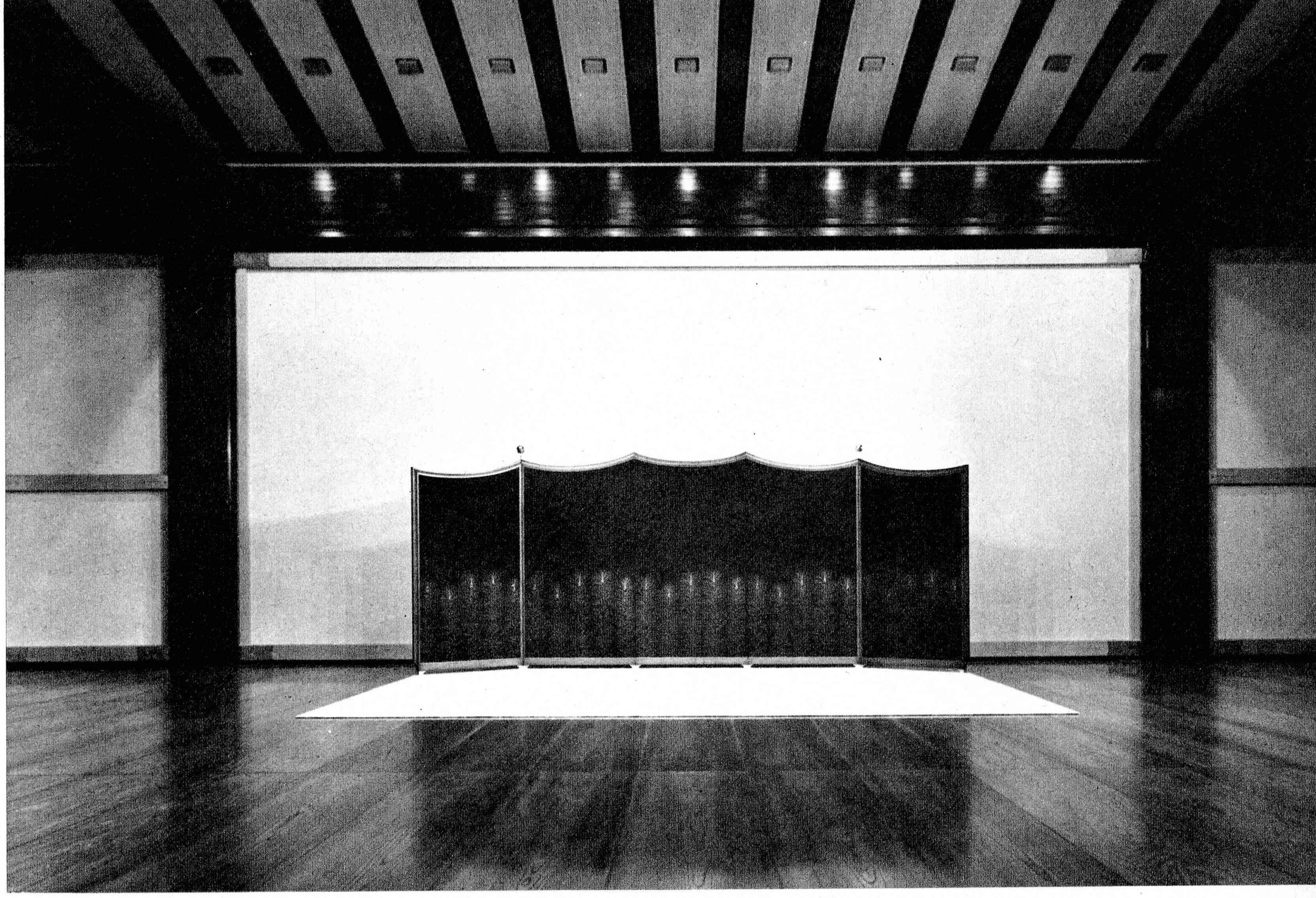
Next page: The Seiden as viewed from the courtyard. It is beautifully reflected in the water of a bronze basin set up in the Edo Period. The central structure of the new palace, it will be used for Imperial attestation ceremony and other official functions.





Minamidamari (entrance hall) of the Chowaden, covering an area of about 500 square meters. Chandeliers are charmingly reflected on the black granite floor, polished like a mirror. Located up a gentle staircase is the lobby with the giant wall picture, done by Kaii Higashiyama, a top Japanese-style painter of today.

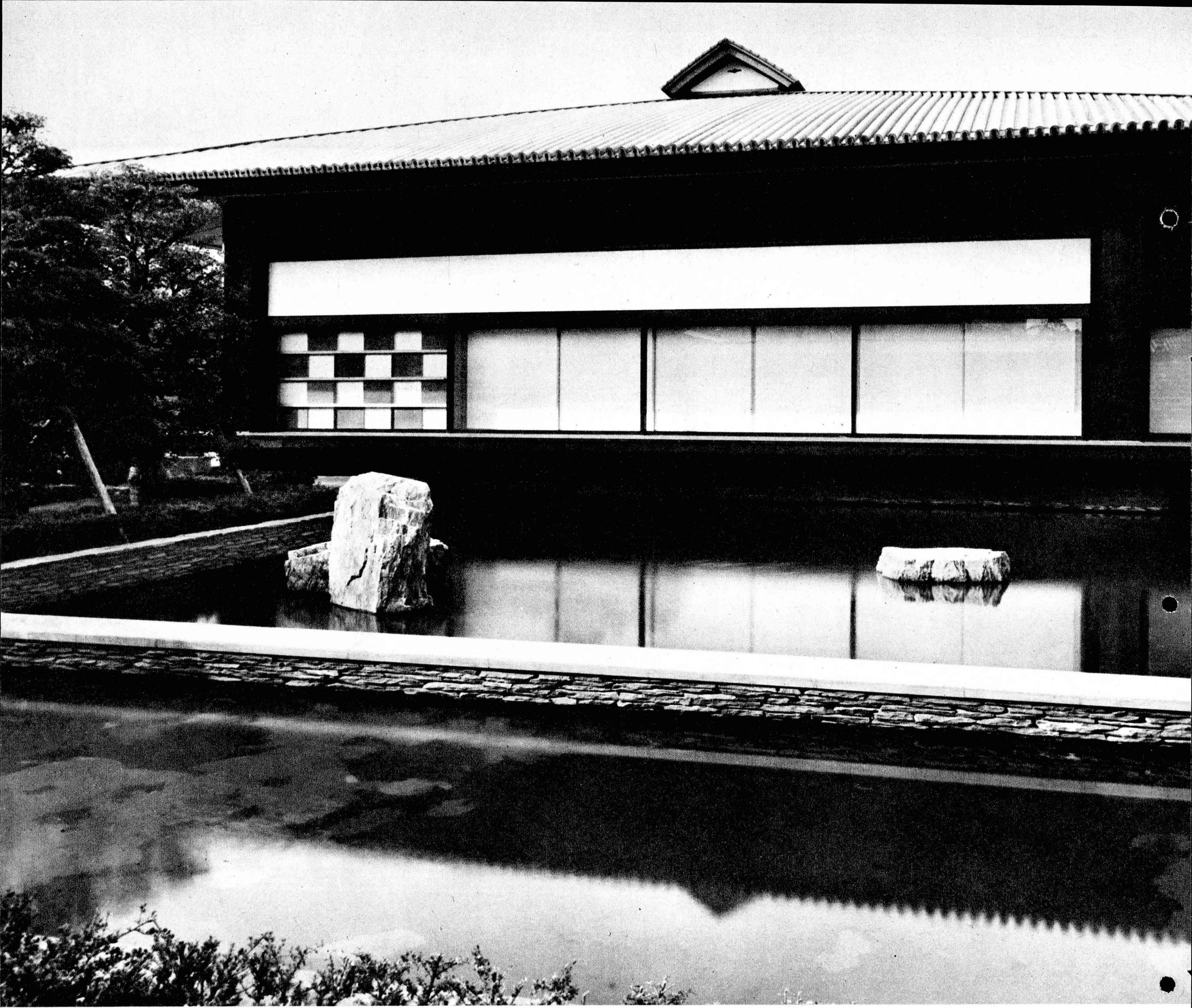




Matsunoma (Pine Room) of the Seiden, where various functions will be held. The Emperor and Empress will be seated in front of the screen.

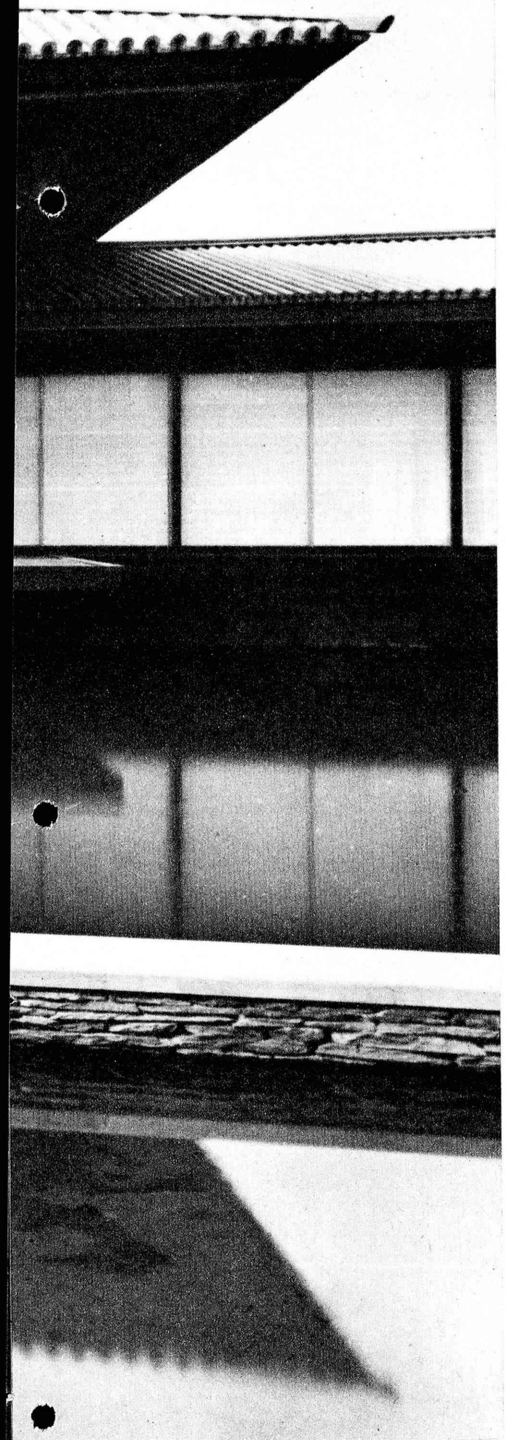
East Corridor of the Seiden. Located behind the paper sliding door in the middle is the Matsunoma, the center of the Seiden.





Above: The small dining room as seen across a pond. With a floor space of about 400 square meters, the quadrate room accommodates 50 persons. Right: Corridor connecting the Seiden, the place for official functions, and the Chowaden, the reception hall. It measures 7 meters wide and 70 meters long.







Aerial view of the new Imperial Palace. A building on the right of the palace is the office of the Imperial Household Agency. Part of the building has thus far been used as a provisional palace. Surrounded by forests at upper left is the Fukiage Gosho where the Emperor and Empress reside. At bottom of the photo are the Double Bridge and the front gate (see Page 24). The two-story turret below the new palace is the Fushimi Yagura (see Page 18).



Big, sharp eyes are the trademark of this noted novelist. They are also "cool, penetrating eyes" that incessantly pursue Japan's traditional spirit and beauty.

Photos by KAZUO KAKINUMA

The Literature of Nobel-Prize Winning Author YASUNARI KAWABATA

Yasunari Kawabata last December became the first Japanese to receive the Nobel Prize for Literature. The judges recognized "his narrative mastership, which with great sensibility expresses the essence of the Japanese mind." Let us take a glimpse at Kawabata's world of literature and a few of his representative works which have been translated into foreign languages.

KAWABATA is probably the most Japanese of all the writers of present-day Japan. His literary style takes full advantage of the unique beauty and nuances of the Japanese language. His narrative technique is rooted in the tradition of Japanese literature, having something in common with that of "Genji Monogatari" and the *haikai* poems. Most of his stories are set against a background of typically Japanese land and customs such as associated with the terms Kyoto, Kamakura, tea ceremony, *geisha* and *kimono*.

In fact, so typically Japanese are Kawabata's works that, upon hearing the news of the honor bestowed on Kawabata, not a few Japanese doubted whether his literature could be understood at all by foreigners. One could hardly appreciate his novels without a complete knowledge of the Japanese language or things Japanese in general. The consensus among translators is that Kawabata's works are the most difficult of all contemporary Japanese literary works to render into a foreign language. However, in his purely Japanese literary world, there is something that transcends all differences in language and way of life—a theme marked by the perpetuity of art that never fails to reach into the heart of all readers, regardless of nationality, and even a theme that place his works in the forefront of modern literature.

To understand Kawabata's literature, the reader must, before anything else, know something about his early life. For already in his childhood, a foundation was in the making for his literature characterized by a relentless pursuit of the pathos in man's life and mental agony of modern man, staring at things he portrays with an inexorable eye of "proud solitude," and giving full play to his keen and delicate sensitivity to beauty and to the Japanese people's unique sentiment rooted in tradition since the days of "Genji Monogatari."

Kawabata was born in 1889 in Osaka, the second largest city in Japan (following Tokyo) and a center of traditional culture. At the age of two, he lost his father, who was a physician, and at three his mother. When he was seven, his grandmother died, followed by his sister, the only sibling. As a middle school student of 15, he was bereaved of his grandfather who had brought him up. The fact that he was thus left all alone in this world at the tender age of 15 seems to have determined Kawabata's literary stance. In his self-formative years, he experienced the sorrow and sentimentality of an orphan, and out of his effort to fight back these emotions came the "inexorable stare" and the posture of "proud solitude." One perceives a shade of solitude in all characters of his novels. Kawabata admits, "It may be that the sentiments of an orphan run deep in all of my works and all of my life."

That Kawabata chose a writing career is said to be during his middle school years, when he developed a taste for Japanese classics. He was particularly interested in "Genji Monogatari" by Murasaki Shikibu and "Makura no Soshi" by Sei Shonagon—masterpieces of monarchic age literature of the 10th century. Indicating the great influence of classics on his works, Kawabata later wrote:

"As a boy, I read 'Genji Monogatari' and 'Makura no Soshi.' I read whatever classical works I got hold of. Of course, I couldn't understand their meaning. I just read them for the ring of the words and tone of the sentences. By reading them aloud I was drawn into a world of a boy's pathos. As I look back, I feel that this had a strong influence on my style of writing. When I write something now, I still hear the sounds that are so dear to me. I can never disregard these sounds."

In the speech he made at Stockholm last December after being awarded the Nobel Prize, Kawabata praised the greatness of "Genji Monogatari." "Following the appearance of 'Genji Monogatari' Japanese novels yearned after the high standard of this great masterpiece in a stream of variations and copies that lasted for hundreds of years. 'Genji Monogatari' also provided a source of esthetic refinement extensively and intensively in all forms of artistic pursuit ranging from verse and prose to fine arts and industrial arts and even to garden landscaping."

The sentiments of solitude and love for classics with which his young mind was instilled, provided Kawabata with the motive force to producing a succession of great works in his later years.

After finishing middle school in Osaka, Kawabata moved to Tokyo, where he entered the First High School and then went on to Tokyo Imperial University (now Tokyo University) to major in Japanese literature. All through his school years, he kept up his original enthusiasm to become a novelist. He wrote short stories for literary magazines and attracted attention in literary circles as a promising young writer.

THAT Kawabata first established a firm position as an author was through "The Izu Dancer," which he announced in 1926 at the age of 27. This is a short story—a lyrical gem—telling of a fleeting love between a 20-year-old high-school boy on a trip to the Izu spas and a young dancer, who is an itinerant entertainer. Suffering from the loneliness of an orphan and craving for human affection, the solitary youth feels the goodwill of the innocent, openhearted maiden, and his warped character is replaced by warm human feelings, just as ice melts in spring. This work overflows with the author's frank appreciation of human affection.

"The Izu Dancer" was followed by "Lyrical Songs," "Floral Waltz," "Birds and Beasts" and others in a literary meandering, which culminated in the well-known masterpiece "Snow Country," which came out in the final form in 1947 after the original manuscript was written in 1935–1936.

"Snow Country" relates the romances of a lonesome married man, Shimamura—a middle-age city man who engages in research of Eastern and Western dances—with a simple *geisha* Komako whom he comes across in a hotsprings resort in the snow country, and Yoko, a girl he meets also in the snow country, against the setting of a remote snow-bound village. The author exquisitely describes, with an almost cruel objectiveness and a keen esthetic sense, the beauty of Komako, who, though well aware of the futility of her love, devotes herself to Shimamura, and the delicate psycho-

logical contacts between the two typically Japanese girls, Komako and Yoko. The reader is certain to be struck by the superb technique that the author displays in depicting beauty—for example, the strange sensation created when an occasional light outside the window lights up Yoko's face reflected on the window pane as she travels in a night train; and the pure beauty portrayed in a scene where Komako's rosy-cheeked face appears in a mirror against a glittering white blanket of snow.

Like his other works, this story does not depend on a plot but, rather, consists of an accumulation of esthetic sensibilities which brighten up each chapter. The fate of the hero or heroine is a matter of little concern. To borrow the words of Prof. E.G. Seidensticker of Michigan University, who has translated some of Kawabata's works, they are "marked by a shift from one episode to another, each with rich lyricism, through a well-controlled flow of associations. They seldom build up a large-scale climax or present a clear-cut denouement." Kawabata's novels ignore the usual pattern of beginning, development and denouement in a style unique not to Kawabata alone but to Japanese literature as a whole, dating back to "Genji Monogatari."

SOON after World War II, Kawabata declared: "From now on, I shall write only of the sorrow and beauty of Japan. I shall live with our mountains and rivers as my soul." As a matter of fact, all the works he has written since faithfully reflect this attitude.

"Thousand Cranes," written as a magazine serial between 1949 and 1951, as does "Snow Country," consists of a number of episodes, each of which can be appreciated as an independent short story. This is one of the many Kawabata novels that deals with a theme of immorality. A series of occurences that are hardly conceivable in reality—a father and his son have relations with the same woman, while the mother and her daughter are involved with the same man—are described against a typically Japanese background of *chado* (tea ceremony). The father is in love with the widow of his friend, Mrs. Ohta, but after the father's death the son Kikuji become intimate with her, until she commits suicide. Kikuji is then attracted to her daughter, Fumiko, who to him had been nothing more than the daughter of his lover. Lonesome and nihilistic, Kikuji just begins to find a companion for life in Fumiko and, through her, happiness, when she disappears as though convinced that she should end her life when she gave herself to Kikuji. That is where the story ends. Kikuji embraces Mrs. Ohta despite his knowledge of her past, while Fumiko comes to have relations with Kikuji although she knows of his former affairs with her mother. One gets the impression that the younger man and woman are governed by a sort of fate from which they cannot free themselves.

While dealing with abnormal relations, the world of this novel is not one of carnal desire. It is an esthetic world that transcends moral consciousness, a world of fantasy. Founded as it is on immoral deeds, the fleeting and fragile love all the more constitutes a world of absolute beauty. "Thousand Cranes" has much in common with "Genji Monogatari" in that it tells of the transcience and beauty of

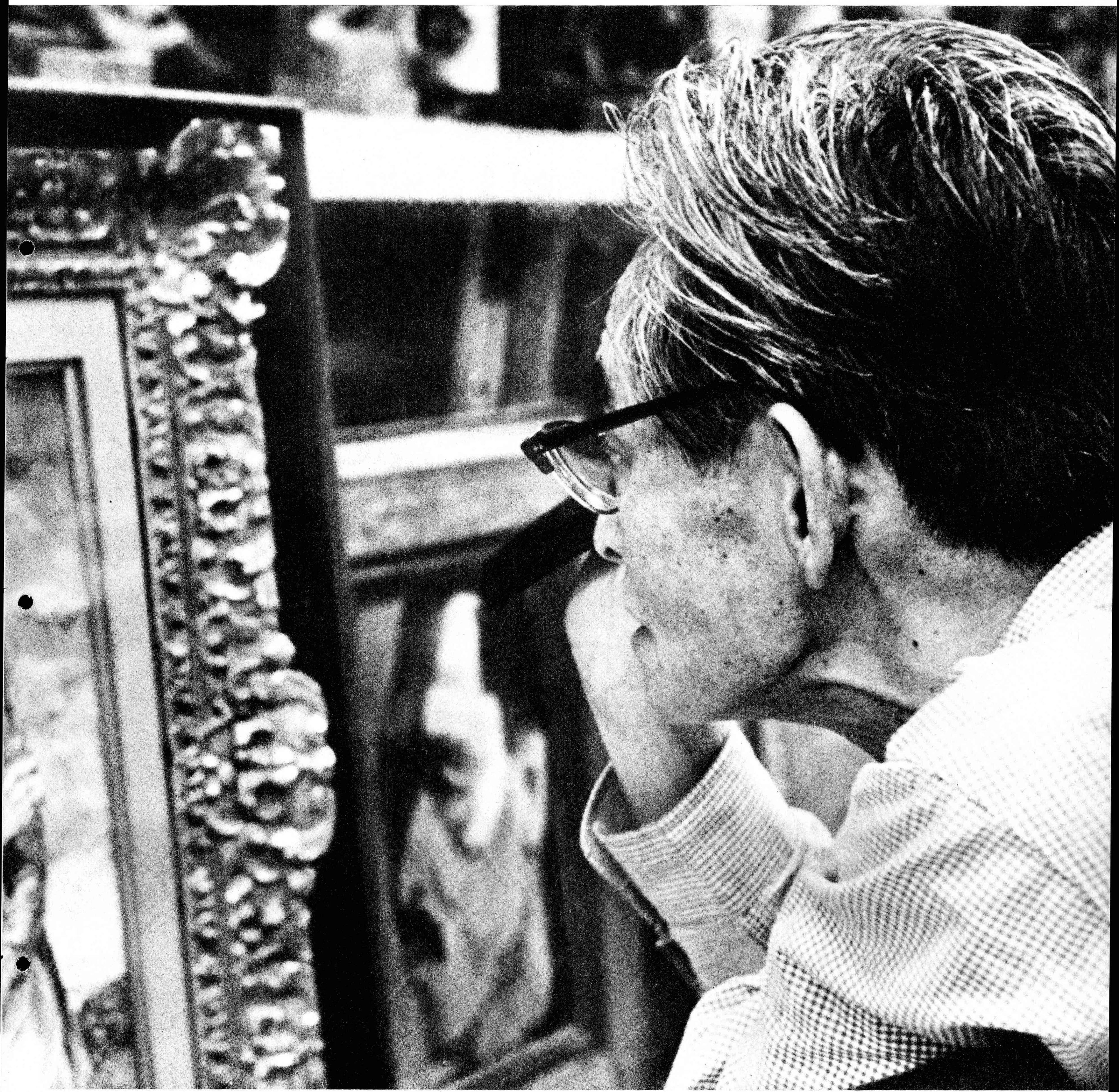


Kawabata looking at a picture of the late Leonardo Foujita at a gallery of Tokyo. He is well known for his profound knowledge of art.

love and of the dreadful inescapability of destiny ordained by our forebears. Again, it is a peculiarly Japanese novel.

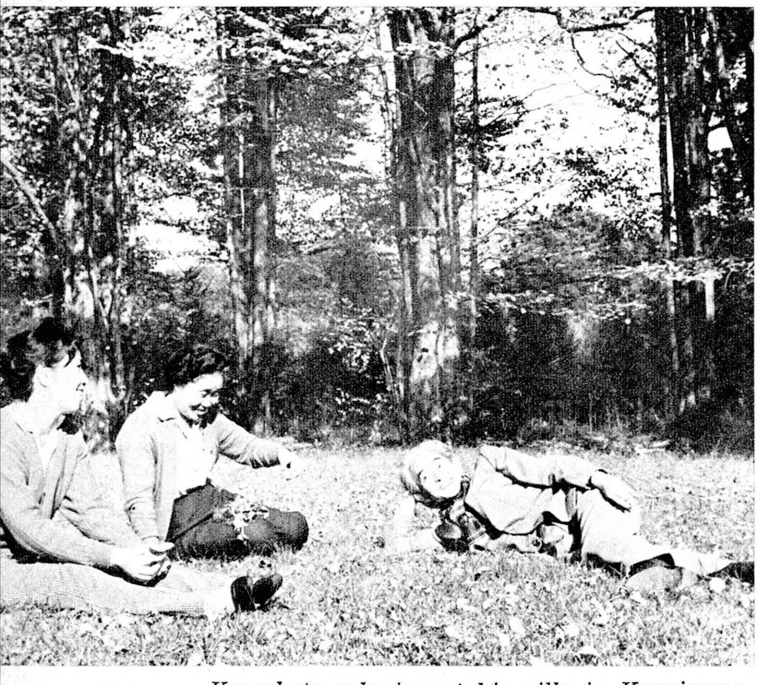
Most of Kawabata's works, including "Snow Country" and "Thousand Cranes," bring together a lonely man who seeks love, yet dreads its completion, and a woman who is loved by the man but is so evanescent that one feels she might disappear any moment far into the background. Their love is invariably marked by subtlety and insecurity. The apparent insecurity, however, is interspersed by moments of such purity that gives the reader an impression of true, unconditional love. These pure moments—which may be termed beauty of the highest order—make up the most moving aspects of Kawabata's literature.

Following close on the heels of "Thousand Cranes" came "Sounds of a Mountain" (1949–1954), which describes the tragedy of a complicated middle-class household in the ancient city of Kamakura revolving around the hero Shingo Ogata, an aged man who works for a company in Tokyo, where he commutes daily



from Kamakura.

Years ago, Shingo had set his heart on a beautiful woman, who happened to be a sister of his wife, Yasuko. She married another man and later died, but her memory still lives in the heart of Shingo, who is always bothered with a sense of dissatisfaction over the unrewarded love. Moreover, Shingo's family is plagued with endless trouble. His married son Shuichi is in love with a war widow, while his married daughter Fusako has been separated from her husband and has returned to her parent's home with children. For Shingo, Shuichi's young wife Kikuko is the only window that lets air in the oppressive home. The natural friendliness between father-in-law and daughter-in-law comes to border on illicit love. This delicate state provides the main theme of the novel. Tired from old age and faced with the fear of approaching death, Shingo finds youthful desire awakening in his mind. He dreams of embracing a young woman, and goes dancing with his young secretary. Other similar incidents involving the old man, incredible for Shingo himself, happen in rapid succession. These secrets are a subconscious reaction to Shingo's contacts with his young daughter-in-law and stem from the revived love for Yasuko.



Kawabata relaxing at his villa in Karuizawa, Nagano Prefecture. At left is his stepdaughter Masako and beside her is his wife. Hide.

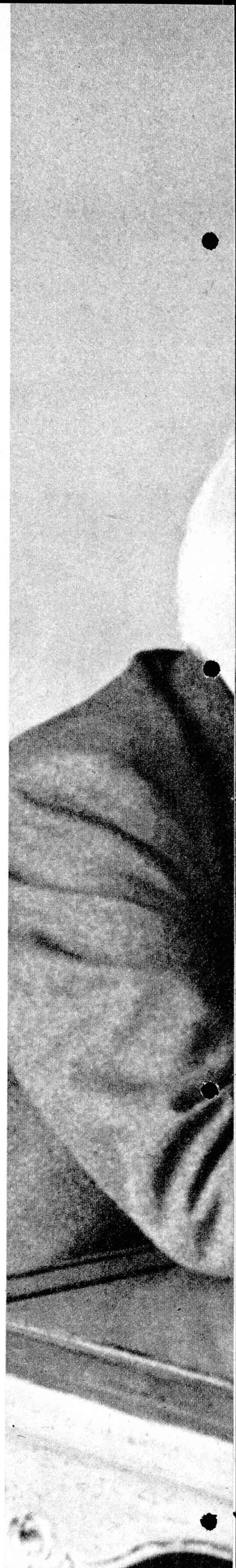
In contrast to "Thousand Cranes," which deals with a world of fantasy, "Sounds of a Mountain" presents an accurate sketch of daily impressions of real life and Japanese society following the country's defeat in World War II. In the emotions, spoken words and images of the personalities that make up the Ogata household, the reader perceives the feelings and sentiments of the author, who said he would write only of the "traditional sorrow of Japan."

THEN, in 1960, when he turned 60, Kawabata came out with "Sleeping Beauty," which stole the year's show in Japan's literary circles for its avant-garde technique and theme. Beautiful girls stripped naked lie in bed deeply asleep with the aid of drug. Old men, well past the age of virility, visit the sleeping beauties to spend a night with them. Among the visitors to this house, which provides impotent old men with form of dream is Yoshio Eguchi, 67, who frequents the secret place where he, without disclosing his identity, can have a woman's body all to himself as far as his ability permits. The novel consists of a description of the shifts of Eguchi's thoughts.

Dealing with a most unusual theme, this work shows a strong tendency of eroticism and romanticism. It is embellished with dazzling splendor, with the blooming beauty of young women that stands out against the background of old men. The author describes with subtlety the shades of difference in the figures, facial features and fragrance of the sleeping beauties. Also described with expert skill and grace are the hero's mental associations and recollections which vary with each partner. This work and "Thousand Cranes" share a common feature in the unrealistic theme and in the pursuit of an esthetic, supranatural world of fantasy and beauty.

Soon after "Sleeping Beauty," Kawabata published "Kyoto," which strikes home the author's deep attachment to ancient Japan and to beautiful things of Japan. This is a story of identical twin sisters who were separated soon after birth but grew up into beautiful young ladies, as though predestined for lack of communication. The solitude of the two sisters, and the wonder and solitude of human existence are brought out in relief against the background of Kyoto's historic sites, customs and manners, and colorful annual events. The beauty of the women are superimposed on the beauty of the ancient capital, emphasizing each other.

During his 50 years' activities as a writer, Kawabata has produced numerous works, of which the six introduced above are the most widely read and counted among the masterpieces of modern Japanese literature.





Kawabata joyfully chatting with Ikuma Arishima, a noted painter and his neighbor, in his study about the receipt of the 1968 Nobel Prize for Literature.

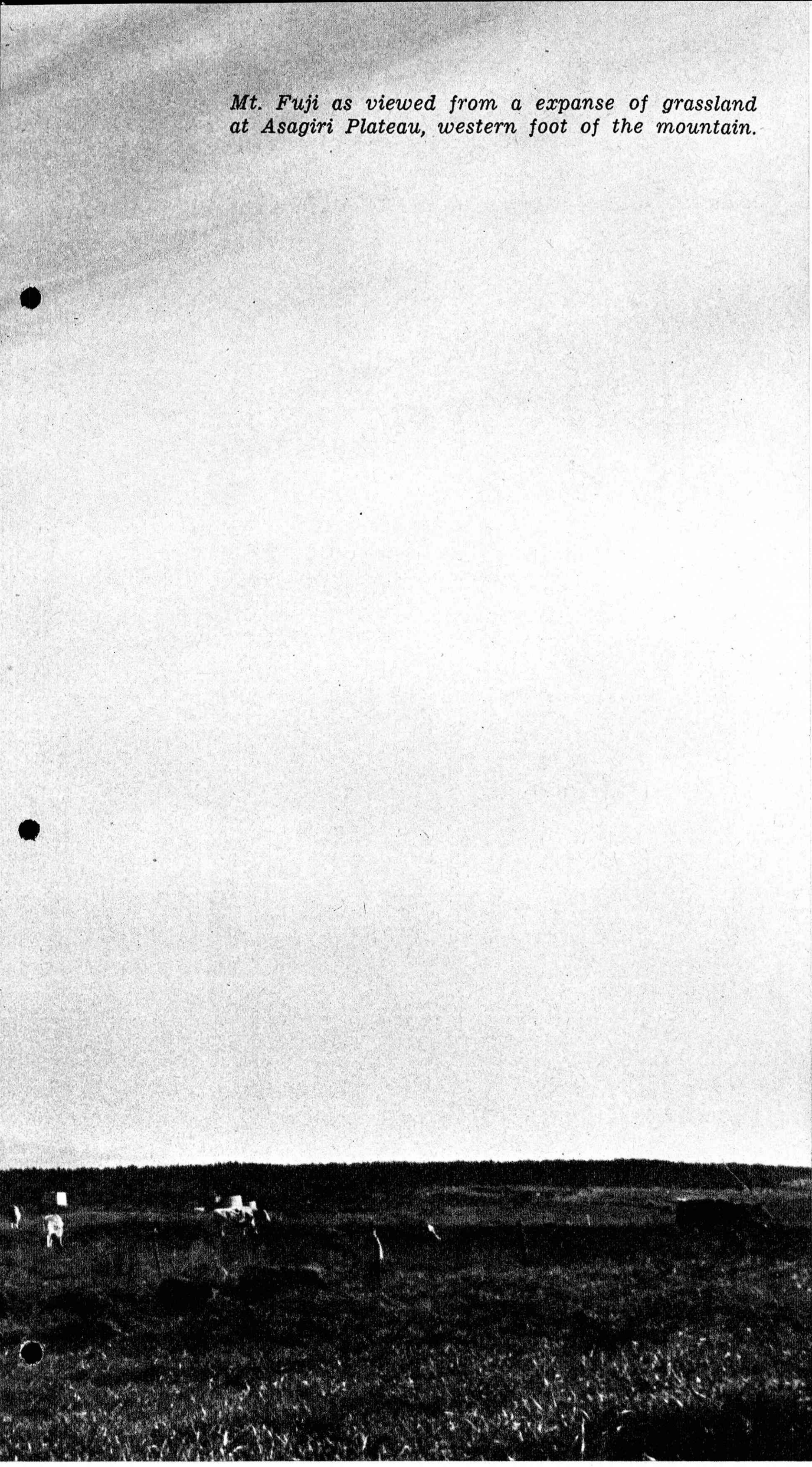


Mt. Fuji is large and very beautiful. The appearance of this grand mountain, which changes from season to season, impresses us with the force and beauty of nature far more understandably than any of man-made epithets. And this mountain forms the center or background of the Fuji-Hakone-Izu National Park. The Hakone portion of the park is well known for its many hot springs, while the Izu section has attained fame for its beautiful coastline. By contrast, the central attraction in the Fuji sector is the beautiful figure of Mt. Fuji, the highest mountain in Japan (3,776 meters), which is considered typical of "konide" mountains. Indispensable ingredients of Mt. Fuji's foreground are the Fuji Five Lakes dotting the northern foot of the mountain like a string of gems.

Transportation to Mt. Fuji and the Fuji Five Lakes has been greatly improved in the past four or five years. National and private railways have branched out into the region from north, south, east and west, while regular sightseeing bus services are available along a loop national highway in the region through all seasons. Tourist facilities have also developed with great rapidity, including the completely paved Fuji Subaru Line road reaching to an altitude of 2,400 meters; the Fuji Plateau Golf Course and skating rinks at Subashiri; the Fujikyu Highland, a comprehensive amusement center; the pleasure boating service on the five lakes; and camping sites.

Mt. Fuji is especially beautiful figure in winter. Early on the morning of a fine Saturday, we left Tokyo by car, our plan to put up at an inn in mountains or by Lake Kawaguchi and return to Tokyo on Sunday night so that we might have enough time for appreciating the beauty of the Fuji area. This, we hoped, would enable us to enjoy the charming views of Mt. Fuji bright with evening and morning glow and venture out of usual driveways into hamlets surrounded by deep forests with the majestic mountain towering serenely above. This immersion in nature we thought would blow away an air of urban gloom which clung to us.

We drove past Atsugi toward Gotemba along the Tomei (Tokyo-Nagoya) Expressway at 100 kilometers per hour. And after emerging a tunnel, there was Mt. Fuji shining in the morning sun in front of us. It towers imposingly over rows of roofs and the expressway. From then on, we could enjoy the beauty of this great mountain from various angles and in its various shapes. After driving 10 kilometers southward from Gotemba, while seeing Mt. Fuji on



Mt. Fuji as viewed from a expanse of grassland at Asagiri Plateau, western foot of the mountain.

MT. FUJI AND VICINITY

Glamorous Attractions for Drivers

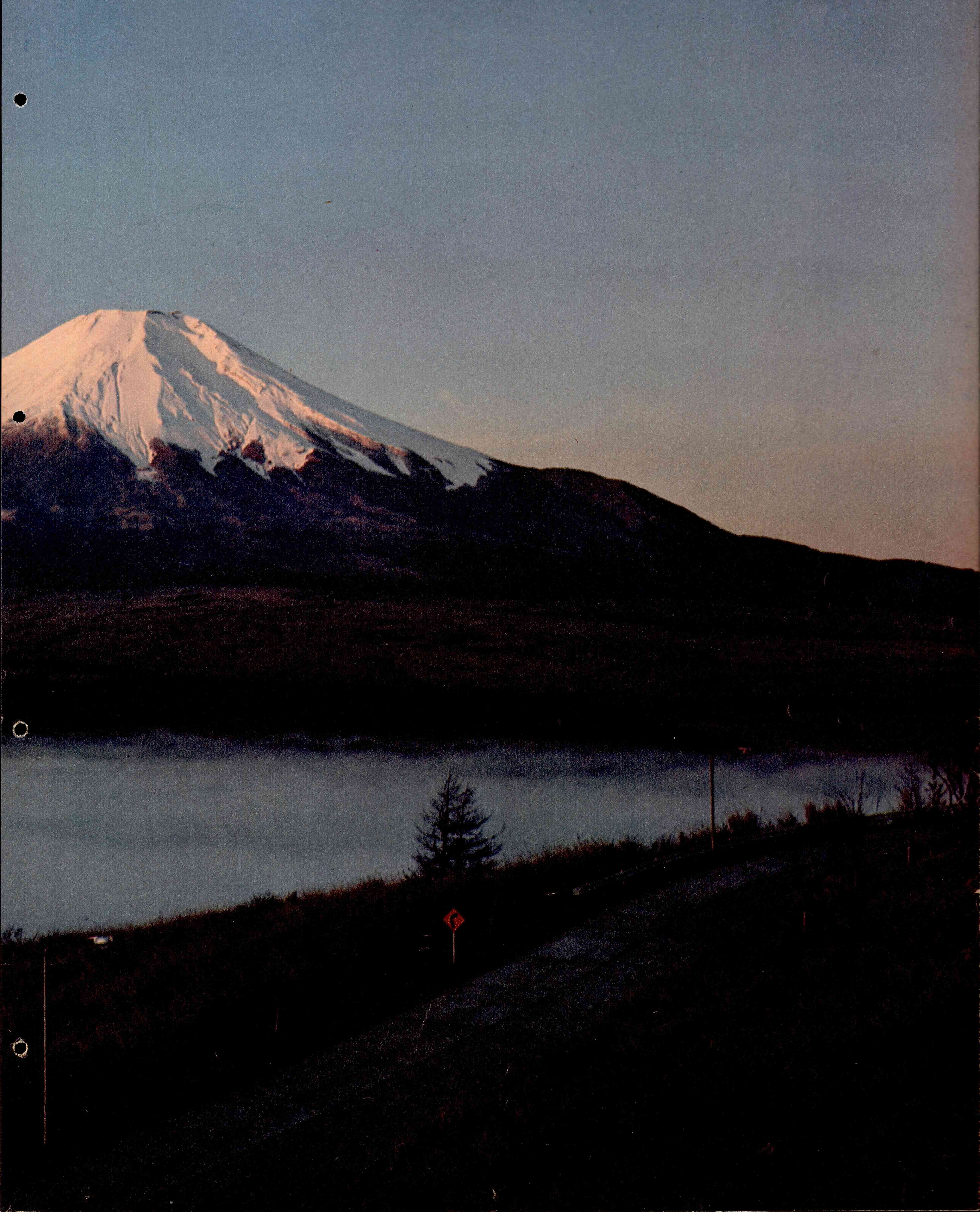
the right, we departed from the national highway. We agreed to take the Jurigi highway, which, though unpaved as yet, is closer to the mountain. We drove along this route to Fujinomiya through a sea of forests. On the way, we frequently came across flocks of sheep, cattle and horses in the vast meadows at the foot of the mountain. We got off and spent some time, enthralled by the many animals. Awakened by chilly, biting wind out of our spell-bound state, we got back to the car and turned on the heater.

Fujinomiya City is the base for the "front entrance" route for climbing Mt. Fuji and the terminus for a bus service, which takes climbers up to an altitude of 2,160 meters. Compared with the back route on which we met no cars or people, the Class 1 national highway leading northward from Fujinomiya is used by many cars. And the scenery through which we passed changes into a vast expanse of grassland spreading around the foot of the mountain. Seeing various scenic spots, such as the Shiraito-no-taki Fall, the Asagiri Plateau and Inokashira Park on our right and left, we drove along smoothly toward the first lake. The blue sky, the green meadows and white carpet of snow spreading halfway down the mountain—what a fascinating combination! Any portion of the scenery makes a superb picture!

After lunching at a drive-in, we reached Lake Motosu, the deepest (133 meters) of the five famous lakes, at 2 p.m. As long as we follow the national highway, we knew we could see the lakes on the left and Mt. Fuji on the right. Therefore, we decided to diverge from the highway again after passing Lake Shoji. We thus drove on to a route along the northern shore of Lake Saiko. We saw the lake, and beyond it, a sea of forests, and then looked up at clouds and Mt. Fuji towering over everything. We could see the identical scenery, though inverted, reflected in the surface of the lake. There are very many camping sites around this lake, which are dotted with bungalows and tents in summer. Halfway along the shore of Lake Kawaguchi, we came stopped and waited for sunset. Lights began to shine in a town across the lake and Mt. Fuji's summit became ablaze with evening glow. We just stood awed and speechless probably like others visiting this spot at this hour of the day. Lake Kawaguchi, the largest of the five, had already turned into a vast expanse of black. By the time we relaxed in a room of Hotel Mt. Fuji atop a hill, only the 3,776-meter summit of the majestic mountain was visible as a red silhouette in the night sky.

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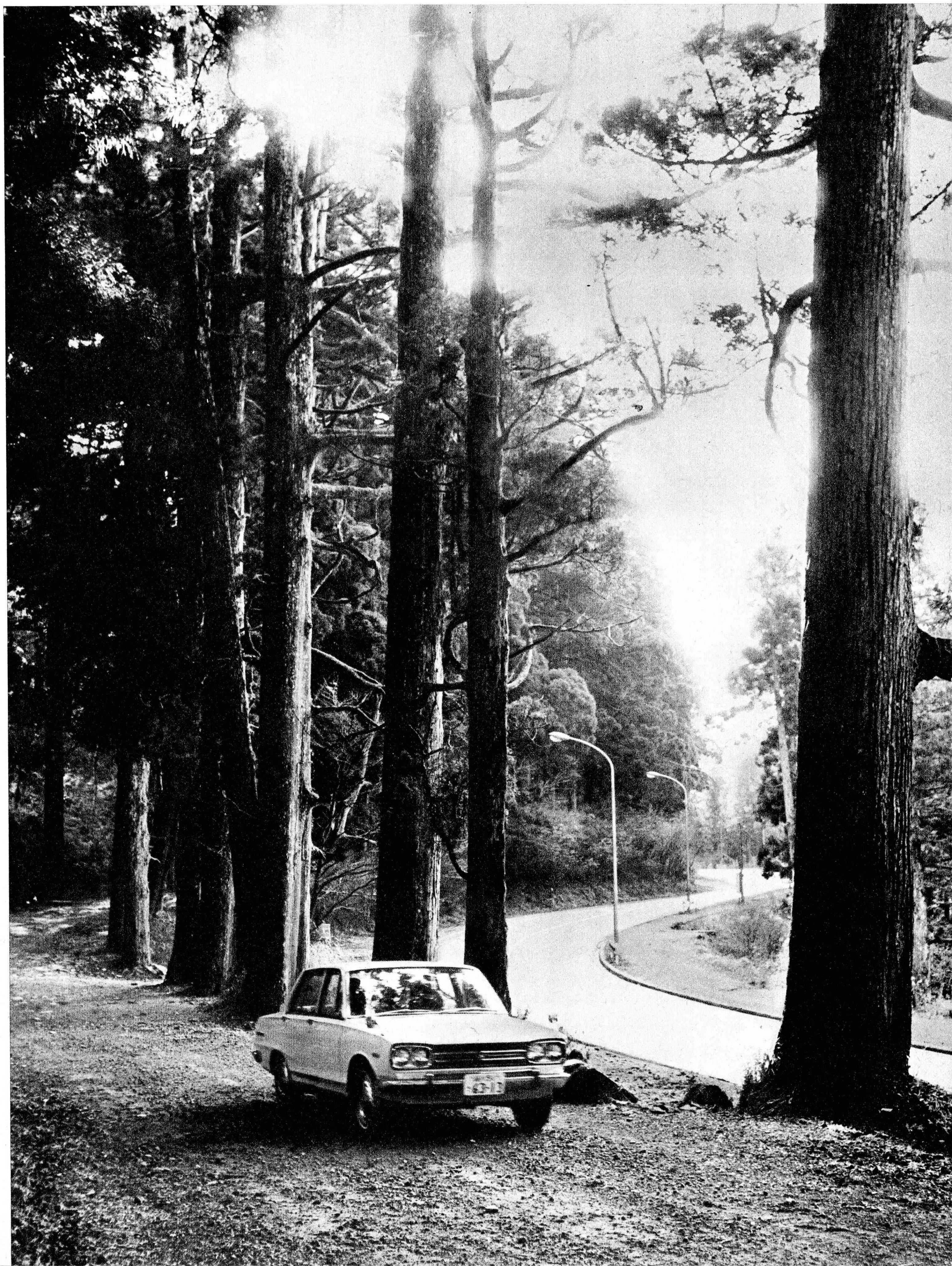


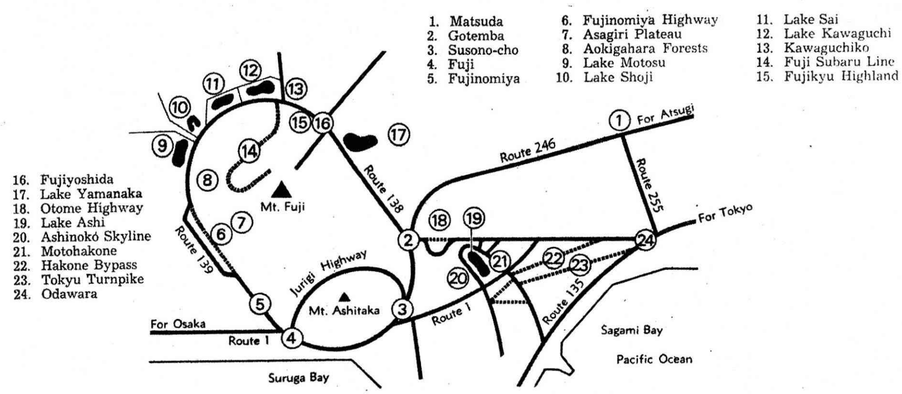
Mt. Fuji seen from Hotel Mt. Fuji. Lake Yamanaka is hidden under banks of clouds.



Left: Banks of clouds at daybreak. The scenery changes from minute to minute.

Skyline Touring Deluxe: Manufactured by Nissan Motor Co.; 1500 cc, 4-door, 5-seater; max. output: 88/6000 rpm, max. speed: 160 km/h.





Oshino Hamlet nestling in the northwestern nook of Mt. Fuji where one can enjoy a view of the mountain ablaze with morning glow.



At 6 a.m. the next morning, we were awakened by a morning call to see Mt. Fuji at daybreak. Lake Kawaguchi was not seen, hidden by banks of clouds. The cameraman, rubbing his half-sleeping eyes, dashed out into the subzero air. After breakfast, we took a look at the Oshinohakkai, a pond of gushing water, and then went to the Fujikyu Highland. This is an extensive amusement center against the background of Mt. Fuji, equipped with a model of the great mountain, a giant coaster protruding into the sky, a huge Ferris wheel, and three skating rinks, including a large one based on speed skating rules. Since this was a Sunday, it looked like a veritable paradise for merrymaking youth and children.

The Fuji Subaru Line is Japan's Class A mountain driveway. Completely paved, it reaches to an altitude of 2,340 meters. As we sped along, Lake Kawaguchi rapidly sank lower and lower and soon, the mountains of the Southern Japan Alps came into view. To our regret, the blanket of snow had already come down to an altitude of 1,800 meters, and forced us to turn back. In summer, it is said, this driveway is crowded with cars, making it almost unbelievable that the road is located as high as 2,500 meters.

The last spot we visited was a scarlet foliage observation platform near the shore of Lake Saiko. We looked up at Mt. Fuji once again ahead of us and down upon a sea of forests, which are so deep that once a person enters he finds it difficult to find a way. We saw the second sunset during our drive, sinking from the right shoulder of Mt. Fuji into the sea of forests.

We headed for home, turning our back on Mt. Fuji. In the distance were mountain highways, well paved and equipped though filled with curves, and lights shining at Hakone, the famous hot spring resort.



Hotel Mt. Fuji, the largest hotel in the region. Every room commands a magnificent view.



Colt 1200 Sporty Deluxe: 2-door, 4-seater, 1189 cc; 62 hp/6000 rpm; max. speed: 140 km/h; manufactured by Mitsubishi Heavy Industries Ltd.

Fujikyu Highland equipped with all manner of amusement facilities centering on skating rinks and coasters.



Only one year to go. Tense but proud, Escort Guides are now looking forward to fulfilling their important mission at EXPO '70.



Preparations for the Japan World Exposition, Osaka, 1970 (EXPO '70), scheduled to open March 15, 1970, are now in full swing. Admission tickets are already on sale, while construction work on varied pavilions is making rapid progress at the fairgrounds in the Senri Hills of Osaka.

Chosen to serve as hostesses during this "festival of the century" are escort guides, who excel in appearance, culture and manners. Aged 22 on the average, all of them speak foreign languages as fluently as they do their mother tongue. Their services will be available in six languages—English, German, French, Spanish, Italian and Russian. They come from various occupations, such as student, announcer, reportage writer and language teacher. Many of the girls have so far been asked to assist in various international gatherings in Japan—for instance, as "companions" at the Tokyo Olympic Games and as "associates" at the Universiade in Tokyo—because of their excellent ability. Their personal backgrounds are colorful, and among them are former Miss Osaka, Miss Kobe, Miss Tourism and even an Olympic figure skater.

Escort Guides Eagerly Awaiting



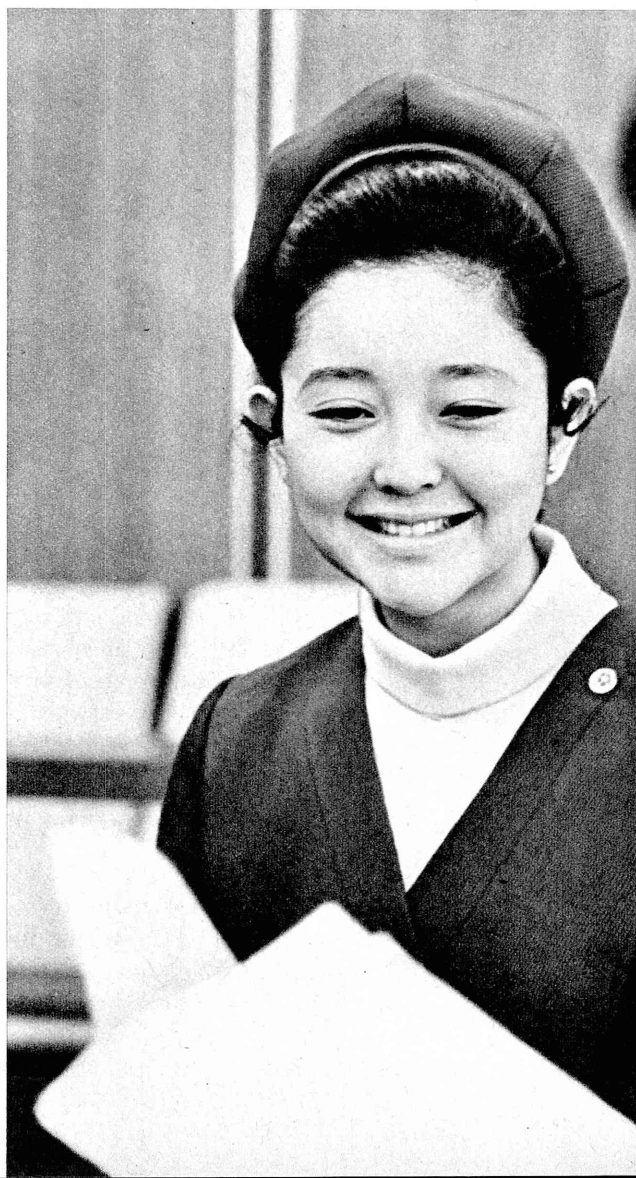
EXPO '70


RAILWAY STAT
CENTRAL LOOP
日本政府館
Japanese Government
シンボルエリア
SYMBOL AREA
MOVING ROAD AND EXPO SERVICE FA
EXHIBITION AREA (For Japanese Exhibitors)
EXHIBITION AREA For Foreign Governments, Int
プラーザ・プロムナード
PLAZA AND PROMENADE
PARK AND RECREATION AREA
PARKING
タワー
TOWER

Left: Looking at a model of the fair site, Escort Guides hopefully dream of playing a brilliant role at the grand world festival a year hence. Right: Careful consultations before setting to publicity work.



Right: Miss Akiko Omori, 23. She speaks English and French. Her hobbies: golf and cooking. Far right: Miss Michiko Nakasone, 21. She speaks English. "EXPO '70 is my sweetheart until the fall of next year," she says.





COURAGE FOR ALL BLIND PEOPLE

THE BRAILLE MAINICHI

Photos by SEIRYU INOUE

The Braille Mainichi is the only newspaper of its kind in Japan and the only such paper in the world that has reporters of its own. Since its inception 46 years ago, the weekly newspaper has been issued without a single suspension to keep the light of hope burning in the minds of the blind throughout Japan under the watchword "Newspaper for the Blind as Well".

The Braille Mainichi is carefully proofread with fingers.





THE headquarters of the Braille Mainichi is located in a room on the fifth floor of the Osaka Office of the Mainichi Shimbun, a major vernacular, in Dojima, Osaka. In the editorial room, which could not be called fine even out of flattery, 10 staff members engage in editing the braille newspaper, buried between heaps of reference data. There is no particular difference from the editorial rooms of ordinary newspapers and magazines —noisy and cluttered but smooth in work—except that typewriters on the desks are braille typewriters and that three of the 10 staffers are blind.

A reporter just back from an assignment vigorously pounds a braille typewriter. Sheet after sheet of news comes out of the typewriter with only six keys (braille letter consists of six raised dots). Another reporter



Standing near the Dojima office in Osaka is Mr. Akira Kawasaki, locking arms with two blind staffers. Young Kawasaki frequently goes to distant places for direct news coverage. On his left with a white stick is Mr. Masaru Ishimori. Mr. Minoru Takahashi is on the right. Both staff reporters are completely blind.

notes down information received by telephone from a reporter stationed in Tokyo. The "seeing" reporters use pencils, but the blind reporters use pocket braille writers with stylus as their fingers. Still another staffer is busy assorting letters to the editor, sent in by blind readers throughout the country. Completed copies are sent to the braille print shop adjoining the building.

The expressions of the all staff members exude a sense of pride and responsibility, indicating their belief that the newspaper they make constitutes an irreplaceable source of news and knowledge for the blind people, estimated to total about 100,000 throughout Japan, and is thus serving as a "traction engine" for the cultural improvement of the blind population.

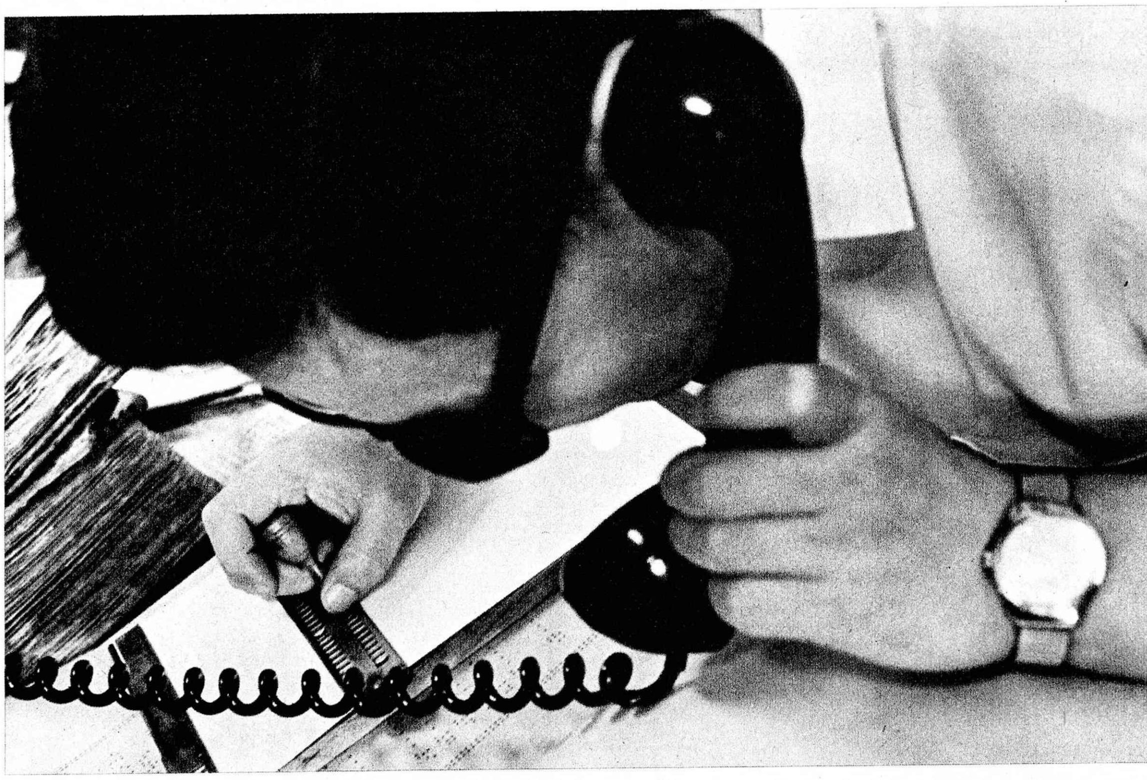
The Braille Mainichi was born on May 11, 1922. Since the publication of a braille newspaper was a very extraordinary undertaking, Mainichi Shimbun leaders of those days were generally cool toward the idea, and the plan was in danger of being voted down. But, it is said, the then President Hikoichi Motoyama overruled the opposition, accepting the argument of the quarters concerned that "a newspaper should undertake a useful social project to atone for those sins which it unknowingly commits during years of its activities."

The Mainichi employed as the first editor-in-chief of the Braille Mainichi the late Kyotaro Nakamura, who was the first Japanese blind man ever to study in Britain and had started publishing the braille paper "Akebono" (Dawn) by himself on a small scale in Tokyo. A braille printing machine was bought from the United States, but a shortage of spare parts caused various difficulties. The inaugural issue of the Braille Mainichi carried an announcement to the effect that the purpose was to "provide knowledge, courage and comfort for the blind people to play an active part in society." With a circulation of 800, it was the world's first full-scale braille newspaper at a time when scarcely any books in braille were available.

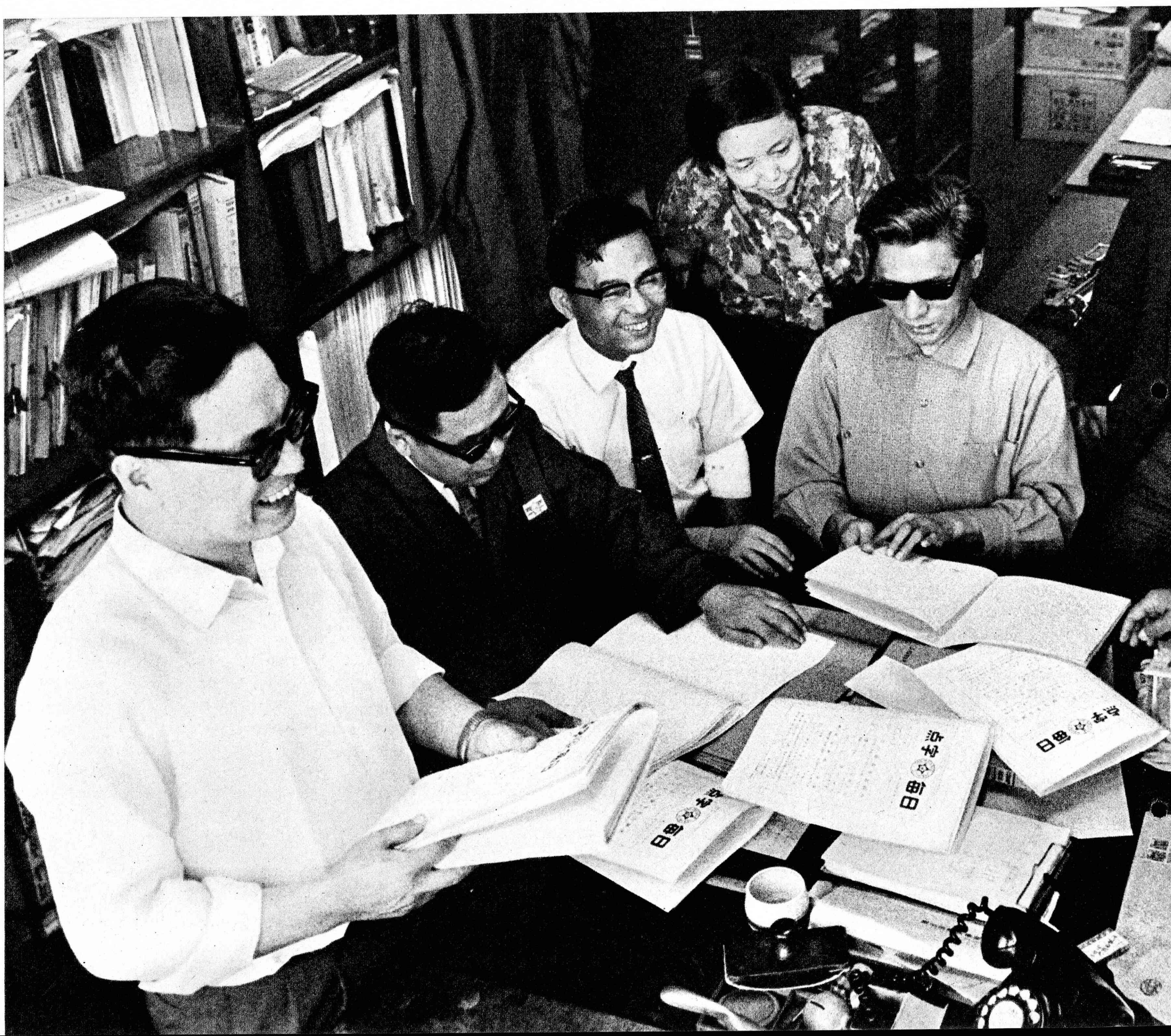
Recalling the days of 46 years ago, Tokujiro Torii, 73, chief director of the Kyoto Lighthouse, a reader of the Braille Mainichi since its first issue, said: "The publication of the Braille Mainichi came as a sort of daybreak for the blind in Japan. To put it rather exaggeratedly, we felt as if our eyes had been opened toward the world."

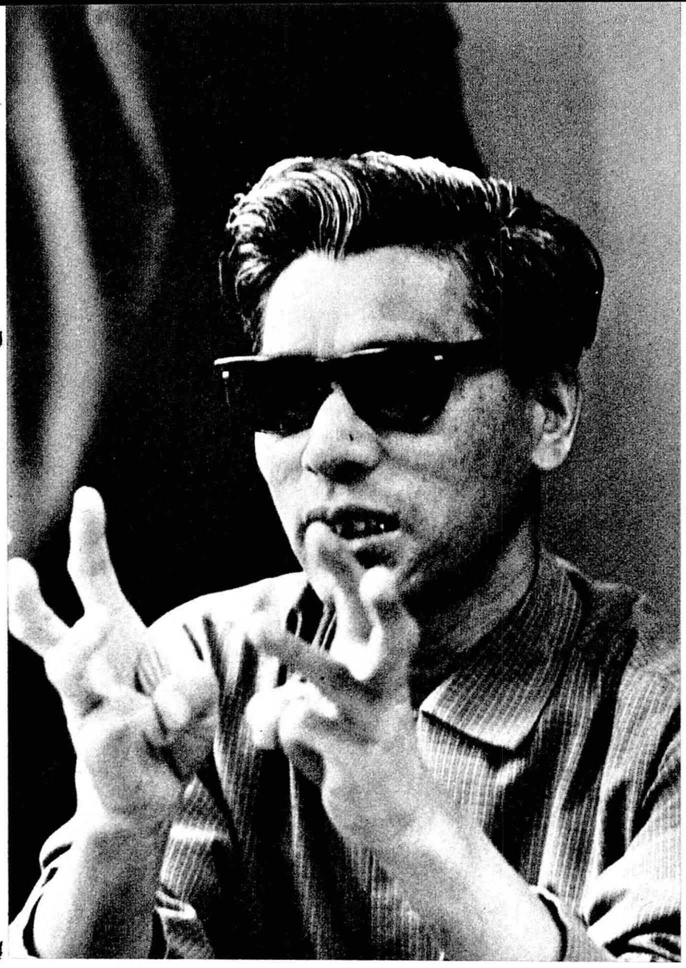
The Braille Mainichi has since continued to play a leading role in elevating the cultural

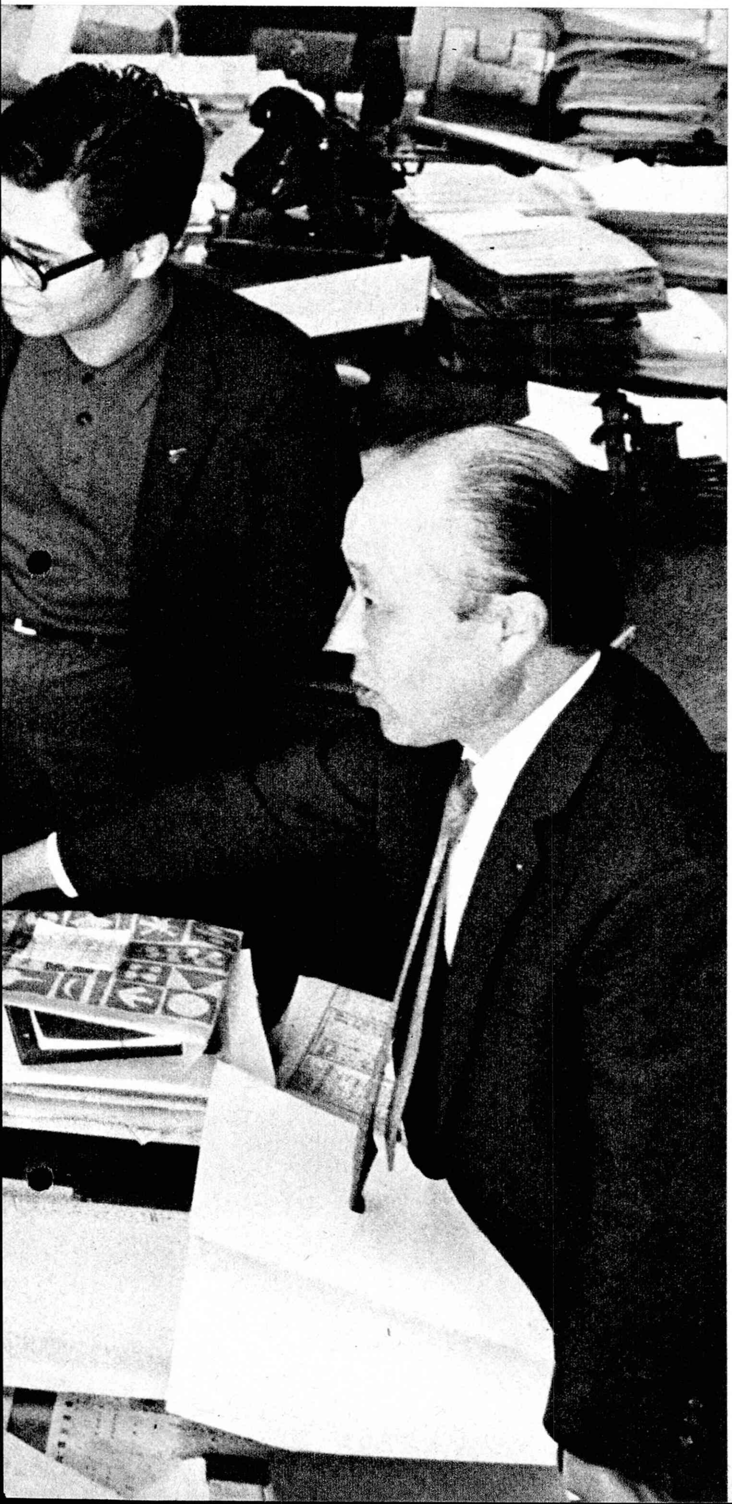
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Right: Mr. Minoru Takahashi takes notes with braille writer while receiving information by telephone. He is in charge of the consultation page for the readers, and also goes out for news coverage. Below: In the small editorial room, the staff members discuss the contents of the Braille Mainichi. At extreme right is Mr. Hisashi Kurosaki, director of the Braille Mainichi Department.









Above left: Mr. Toshio Inagaki was formerly a "seeing" staff member of the Mainichi Daily News, an English-language newspaper. Now blind, he is in charge of introducing overseas information about the blind, and editing the letters to the editor column. Above right: Mr. Masaru Ishimori sometimes goes out for direct news coverage, but his main job is proofreading and revision of the Braille Mainichi.

Continued from Page 57

standards of the blind in Japan and promoting their welfare. In 1925, for instance, when the universal suffrage law was enforced, the paper successfully staged a campaign for the blind people's voting in braille. It has now grown to be a full-fledged weekly newspaper in braille with a circulation of about 10,000. During World War II, the interval of its publication had to be lengthened from a week to 10 days because of a shortage of materials for a time. But not once was its publication suspended, and on January 26 of this year, the 2,388th issue was published.

At present, the Braille Mainichi containing 32 pages is issued every Sunday. The size is 30 x 22 cm and the price 30 yen. Its contents cover politics, economy, current topics, comments, city news, news about the blind, occupations of the blind, welfare and rehabilitation, lectures, home science, livelihood, literature, essays, poetry, book reviews, man of the week, readers' forum, activities of the blind abroad, radio programs, quizes, etc.

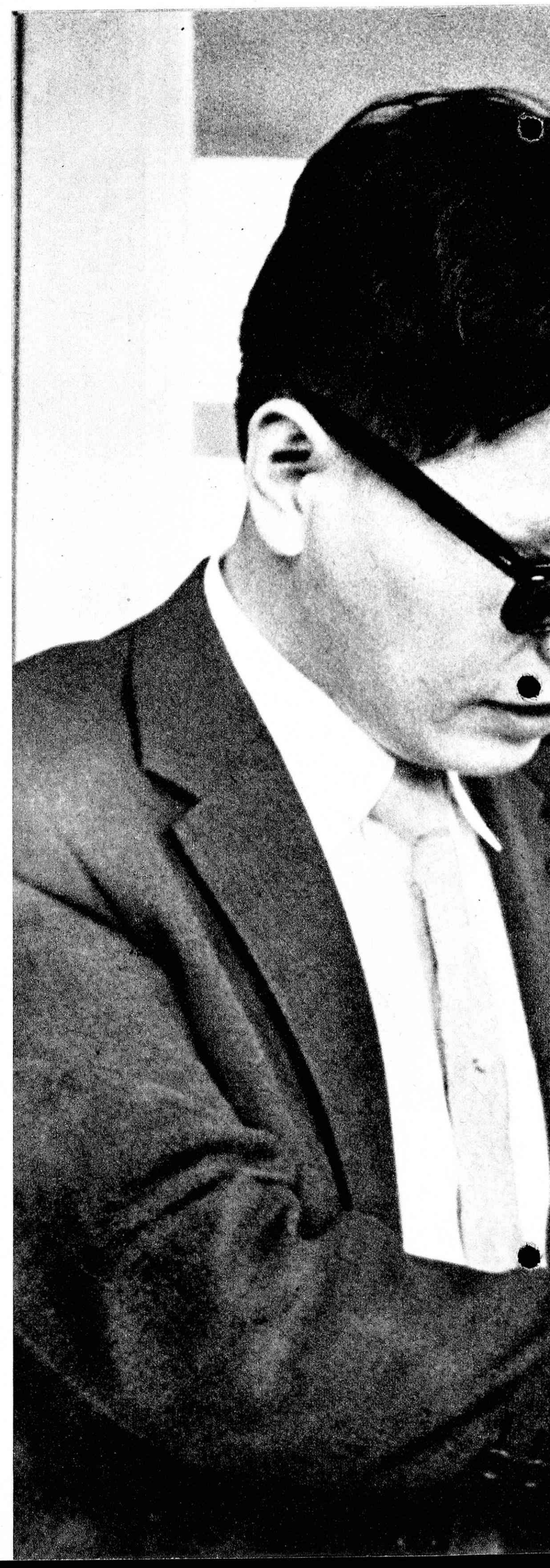
News articles carried by the Braille Mainichi are roughly divided into news of general society and news of the blind people's society. In particular, the latter is indispensable for the blind population. News of the society in general is fully available through the radio, but the Braille Mainichi is about the only source of information about various events in the society of the blind.

In this sense, the activities of the Braille Mainichi's reporters have great significance. Whenever an athletic or cultural event of the blind or a rally for the promotion of their welfare is held, for instance, the reporters promptly go to their sites for direct coverage. Reporters stationed in Tokyo keep close contacts with governmental authorities closely concerned with the blind population to collect news related to the blind. These special reporters laboriously gather news about the blind, which is apt to be ignored by ordinary newspapers, from the standpoint of the blind population. Of course, the news gathering networks, both at home and abroad, of the Mainichi Shimbun are fully utilized to collect news for the Braille Mainichi as well.

The editorial staff of the Braille Mainichi has three completely blind members—Masaru Ishimori, Toshio Inagaki and Minoru Takahashi. They go out to cover news events along with "seeing" assistants. Equipped with pocket braille writer and stylus, they go to the destination by taxi or electric train. They even proceed to distant places for assignment







Opposite page: Reporter Takahashi, completely blind, visits Mr. Tōkujiro Torii, chief director of the Kyoto Lighthouse, for an interview to "see" at first hand its refurbished office. He takes notes with braille writer. He is accompanied by Miss Michiko Kinoshita, an assistant. Above: Hours of sedentary work is a tiring, nerve-unsettling job especially for the blind staffers. They occasionally stand up and move to other seats for rest. Right: Transcribing machine is operated by Mr. Masaichi Yasunaga, a braille printing veteran of forty years.

requiring several days of trip. A blind reporter interviews a blind person and takes notes in braille—this is a unique scene observed in the case of the Braille Mainichi alone. There is no doubt that the stories based on such special coverage have a sort of different "luster" than that of articles written by "seeing" reporters.

Needless to say, exact news reporting is the biggest mission of the Braille Mainichi. But the blind readers are also furnished with important practical information through the pages of lecture on occupations of the blind and "consultation room," in which experts reply to various questions of the blind, such as taxation and laws. The literature page and the readers' column give irreplaceable comfort to the minds of the blind readers. Each and every page is full of articles absolutely vital for the life of the blind.

The Braille Mainichi also engages in a wide range of other activities, such as the sponsoring of national oratorical and athletic meets of schools for the blind, publication of braille textbooks for these schools and the Japanese braille edition of the Readers' Digest, and the issuance of election bulletins in braille. Furthermore, an ultramodern solid-dot braille pinting machine, said to be the third of its type in the world, has been installed in the Waseda Branch of the Mainichi Shimbun's Tokyo headquarters. The machine, soon to go into full operation, will prove a powerful contribution to the various publishing activities of the Braille Mainichi.

It is no easy task to publish a 32-page braille newspaper on a weekly basis. The staff members are busy virtually round the clock. Moreover, the Braille Mainichi is sold below cost under the lofty policy of promoting the welfare of the blind. Commercially, therefore, it is deep in deficit, and the size of the staff and the budget can never be termed sufficient. But the staffers of 17 in Tokyo and Osaka plus the printing staff of seven are struggling ahead for the sake of the blind throughout the country by overcoming various obstacles. Their sense of mission as embodied in their motto "knowledge, courage and comfort for the blind" as well as their close team work obviously promises the unbounded progress of the Braille Mainichi.

Incidentally, the Braille Mainichi has received noted social awards, such as the Kan Kikuchi Prize and the Asahi Prize, because of its great contribution to the blind people's well-being.



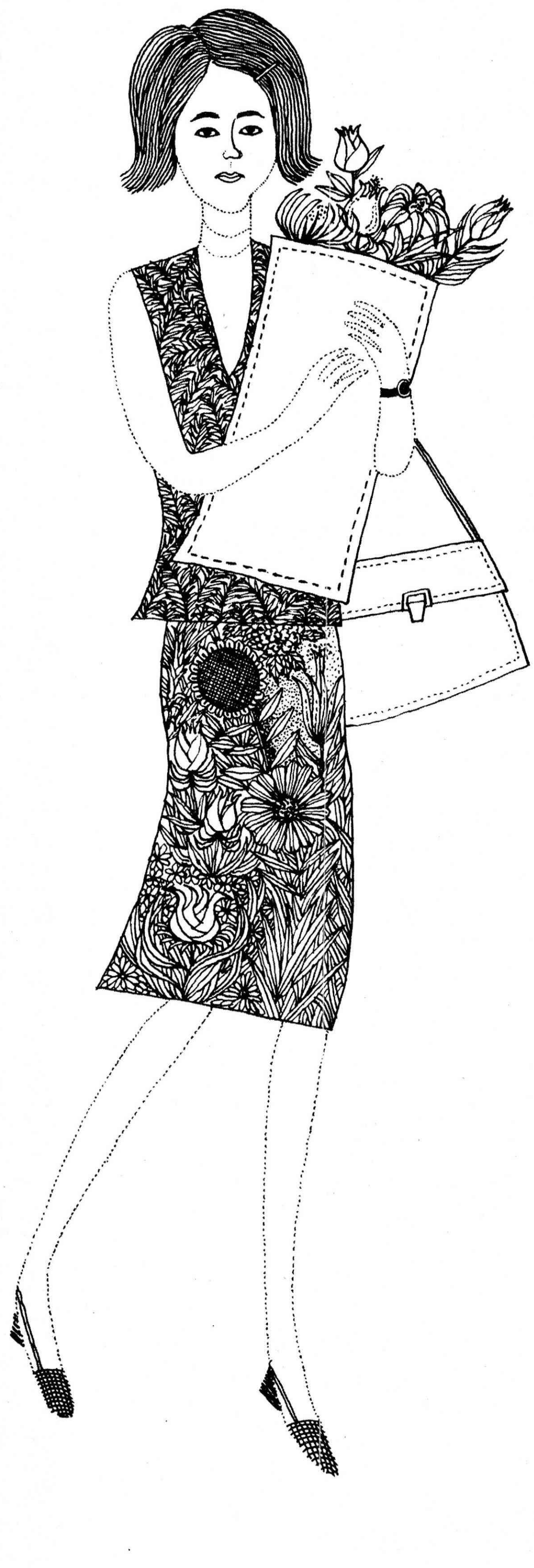

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Opposite page: The printing department of the Braille Mainichi has three braille embossing machines. Left: Mr. Ishimori leaves the Osaka headquarters of the Mainichi Shimbun. He commutes to the office by bus without help. Above: The staffers enjoy a drink or two at a tavern near the office. A drink after a day's hard work tastes especially good.

TIPS ON SHOPPING AND DINING IN TOKYO



BEAUTY SALON

FRENCH

PEARLS

INDIAN

SWORD


The Mellow DATSUN
DATSUN's deep dynamic power flashes you from city to field. From white collar to blue skies. Open skies. Speeds you at 160km/h from smog and soot to reeds waving in the wind.
DATSUN's power is always there.
Always ready.
DATSUN is new now. And will remain new as only a master-crafted car can. And you will see more of the world from this exceptional sedan than from any other comparable car. Actually, Car and Driver magazine (USA) discovered the secret behind the mellow DATSUN. They had this to say: "Seldom do we find such graphic proof that the manufacturer made the product better than it had to." Three matured decades of automotive craftsmanship are offered you in the improved DATSUN 1600. With your acceptance, pleasure springs.
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Japan Illustrated

The Japan Times
QUARTERLY MAGAZINE

COMPUTERIZATION MAKES HEADWAY

JAPAN'S REAL "SWAN LAKE"

1969·VOL.7·NO.2



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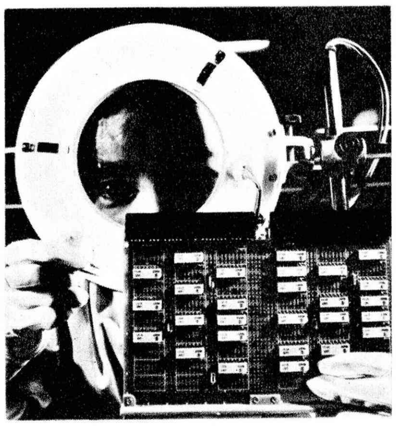
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official airline for EXPO'70

Japan Illustrated

VOL. 7, NO. 2, 1969

CONTENTS



Cover Photo: Checking a print circuit board of electronic computer. Photo by Masamichi Sumiyoshi.

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NATIONALITY

Character of Japanese People

What character do the Japanese have? What do they think in their daily life? The answer to these questions was given recently by an interesting statistical survey on the theme of the Japanese people's character. This survey has been held every five years by the Institute of Statistical Mathematics. The results of surveys over the past 15 years indicate that although there has been no major basic change, uptrends have apparently been noticeable in the Japanese people's rationality, individualistic attitude and self-confidence as Japanese people.



When asked to compare the Japanese people with the Westerners, the proportion of the respondents replying the Japanese are superior has increased from 20 per cent to 33 and then 47 per cent, while the ratio of those answering the Japanese are inferior has dropped from 28 per cent to 14 and 11 per cent.

The most mentioned strong point of the Japanese in the latest survey was diligence, followed by perseverance, courteousness, kindness and aspiration to attain an ideal, in that order. As for weak points, short temper was mentioned by the largest number of respondents. The answer "easily get excited but cool down fast" came next, followed by insularism, imitativeness and vengefulness in that order. The order of these answers regarding strong and weak points was not much different from five years ago. When shown photos of a foreign garden (Versailles Palace) and a Japanese-style garden (Katsura Detached Palace) and asked which they liked, 91 per cent pointed to the Japanese garden.

Queried as to the attitude in daily life, the largest proportion of the respondents said they wanted to "live according to my own taste without thinking of making money or gaining honor." The second was "to live a carefree life from day to day," while there were two third-ranking answers—that is, to "live a clean and just life by overcoming unjust things in the world" and to "work hard and get rich." In the similar surveys before the war, it is said, the answers "live a clean and just life" and "dedicate all energies to society" were mentioned by an overwhelmingly large proportion of people.

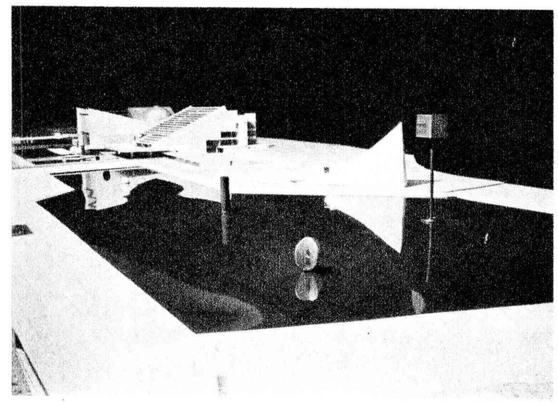
Another interesting thing to note is that when asked, "Which—male or female—would you like to be if you should be reborn?," the number of women replying they want to be born a woman again has been on the sharp rise. Their ratio has risen from 27 per cent to 36 and now, 48 per cent. This may be a proof that life has become very easy for women or that women's position has been largely strengthened. Photo: Commuters' morning rush.

EXPO '70

Biggest World Exposition in History

With only about 300 days to go before the opening of the Japan World Exposition, Osaka, 1970 (EXPO '70), construction work on pavilions, both Japanese and foreign, is proceeding in full blast at the fairgrounds at Senri Hills, Osaka.

To date, a total of 65 countries (inclusive of Hongkong) have made known their formal decision to take part in the fair, already making it certain that EXPO '70 will become the biggest world fair in history, eclipsing the previous Montreal exposition in 1967, which was joined by 60 countries. By area, 18 of the participating countries are in Europe, 14 in Asia, two in Oceania, 13 in the Western Hemisphere, six in the Middle and Near East, and 12 in Africa. The Japan Association for



the 1970 World Exposition predicts several more countries will participate from Africa and Latin America. The total number, it says, will most likely surpass the target of 70.

At present, Japan is replete with an EXPO '70 mood. In Tokyo and Osaka, hotels are being built or expanded fast. Osaka International Airport is being enlarged, while an elevated highway is under construction to shorten the travel time between the airport and fair site to five minutes. At the fairgrounds, the national flags of the 65 countries, which have decided to participate, are fluttering in the sky, and construction work on governmental and private pavilions and joint pavilions is gathering added momentum.

Photos show a giant fountain at the fair and the uniforms of sisters and guards to be posted at the fairgrounds.

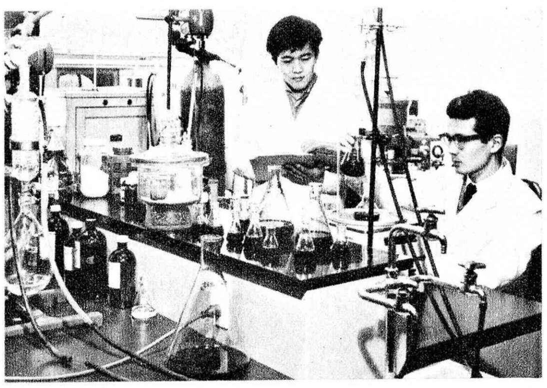


Designed by Isamu Noguchi, the magnificent fountain will spout three tons of water per second downward from a stainless steel box to be placed 33 meters high in a 24,500-square-meter pond on the east of Symbol Zone. Its theme is Dream of Universe and represents the dreams and energies of familiar nature surrounding man, the nature of the space now being familiarized to man, and a new environment man is going to open up.

The uniforms of EXPO sisters, guards and VIP bodyguards have been designed with basic colors of light brown, brown and blue, respectively.

TECHNOLOGY

Epochal Photosensitive Material Developed



Matsushita Electric Industrial Co. has successfully developed a new photosensitive material using organic photoconductor to be coated onto roll film or paper for electrophotographic copying, which makes development without dark room possible. This material is a compound consisting mainly of an organic substance (carbazole) contained in coal tar, with sensitizer and other chemical additives.

This film and sensitive paper using organic photoconductor insulates electricity in a dark place, but when they are exposed to light, the exposed portion becomes conductive. To take advantage of this characteristic, the whole surface of film is made to bear static electricity immediately before exposure. When it is exposed to light, static electricity on the exposed surface flows inside and disappears. Then if developer, such as powdered carbon, is sprayed onto the film, it attaches to those unexposed sections where static electricity still exists, but not to the exposed parts, resulting in a reproduction of a picture. This process is finished in 40 seconds. Prior to the exposure and developing process, the film and sensitive paper do not change in quality even if exposed to strong light. Therefore, they can be stored in a bright place and do not require any such container as magazine.

Matsushita Electric Industrial claims it is the first maker in the world to succeed in the practical application of organic photoconductor. This success, it says, will not only revolutionize the electrophotographic copying techniques, but also open up a new field of semiconductor. Photo shows research on organic photoconductor (at Matsushita Electric Wireless Research Laboratory).

MUSIC

Japan: No. 2 Record Producing Nation in the World

Japan has become the No. 2 producer of phonograph records in the world. According to the Japan Phonograph Record Association, the nation's record output last year amounted to 120,430,000 pieces valued at 43,636 million yen. Japan thus replaced Britain as the No. 2 record maker after the United States.

Compared with the previous year, production volume climbed by 20 per cent, while its value soared by 26 per cent. This means an increase in the sales of high-priced LP records. In particular, the production of 30-centimeter LP records scored a big gain of 38 per cent. Meanwhile, the share of LP records (30 and 17 centimeters) in the total output increased from 19 per cent in 1967 to 23 per cent last year. But this ratio is still low compared with Western nations—that is, 51 per cent in the United States, 44 per cent in Germany, 42 per cent in Britain and 28 per cent in France (all 1967 figures). It will apparently be some time before Japan reaches the levels of these nations in the LP ratio.

Another noteworthy thing is that records of performances by Japanese musicians and singers chalked up a remarkable rise of 70 per cent as against a 21 per cent increase in records of Westerners' performances. For

Japanese Currents

there was a sharp increase in domestic recordings of light music as well as popular songs. This, it may be said, testifies to a further progress in both Japanese performances and recording techniques. The ratio of records made from imported master records to domestic records, which once stood at six to four, has been reversed in the past several years, now standing at four to six. But Japan's per capita number of records possessed is still low. Therefore, Japan's phonograph record market is stlil considered to have great potential, and a competition among record makers is bound to gain in intensity in the years ahead.

PUBLIC NUISANCE

Air Pollution Measuring Room Installed in Tokyo Tower

A special room devoted exclusively to measuring air pollution in central Tokyo and adjacent areas has been installed at the Tokyo Tower Science Institute by Tokyo Shibaura Electric Co., Ltd. (Toshiba) of Japan. Toshiba had earlier developed and installed air pollution monitoring system at the tower, which is Tokyo's tallest structure (333 meters).

The measuring room will serve not only as a vertical structure analysis center of air pollution in Tokyo but will also be used as a center for disseminating information concerning air pollution and its hazards to the general public.



Sulfur dioxide concentrations will be measured at heights of 25, 125 and 225 meters, respectively, taking note of such factors as wind direction, wind velocity and temperature. Engineers at the tower measuring room will carry out research on the relations between air pollution and weather conditions. The phenomenon known as "reversed layer" temperature, which is known to exert great influence on the origin of smog, will be closely studied with the equipment in the new measuring room. Data from each piece of air pollution measuring equipment in the installation will be converted into digital quantities and read into a data processing system.

One of the features of the Toshiba air pollution measuring system (photo) is the simplicity of reading the indicators. Sulfur dioxide concentrations, for instance, are indicated according to the above-mentioned heights in the form of a bar graph.

TOURISM

Overseas Trip Popularized Further

With the spring tourist season reaching a peak in April and May, foreign visitors are seen in large numbers at airports, hotels and shopping centers and in the ancient cities of Nara and Kyoto. On the other hand, Japanese tourists are visiting North America, Europe and even the Soviet Union in great force.

The number of Japanese travelers abroad ranging from primary school pupils to company presidents has shown a sharp upswing year after year. Now six years after the liberalization of overseas trip, it may be said, Japan is entering a full-fledged era of popularized travel abroad.

Keenly aware of this, travel agents are vying hard in luring potential tourists through varied innovations. The Japan Travel Bureau, for instance, has launched a publicity drive with a total of 1,900 travel plans ready to suit people of all strata and occupations. In terms of cost, they range from the economy class tours of up to 500 dollars to a global trip costing 2,000 dollars.

A rich assortment of travel plans to satisfy people with various hobbies is also available, such as "Eating Trip to Europe" for epicureans, "Travel of Music" for music lovers, and "Travel of Art" for those desirous of appreciating fine arts abroad. In a bid to lure those people who take no interest in ordinary tourist travel, JTB has come up with diverse travel plans for exploration—for instance, "Tour of Mysterious New Guinea," "Tour of Areas West of China" to follow the ancient Silk Road, "Tour of Relics of Inca Civilization," and "Africa Safari." For housewives, there is "Camping School in Switzerland for Mothers and Children," while students are offered "Wandervogel of Europe."

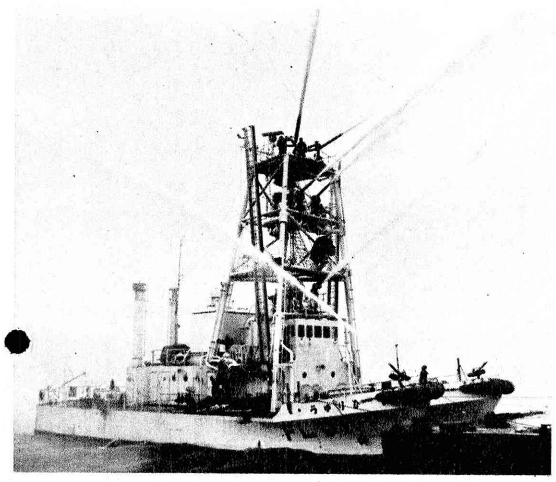
Incidentally, the per capita ceiling on foreign currency spending by ordinary travelers abroad has been raised to 700 dollars since April 1 (500 dollars in the past). And it is said that among Japanese tourists abroad, farmers' organizations spend money most lavishly in both preparations for and during overseas trips. To be sure, luxury trips by chartered planes are being arranged one after another. Photo: Joyous travelers at Tokyo International Air Port.



NEW PRODUCTS

Biggest Catamaran Fireboat

The catamaran fireboat Hiryu—the biggest of its kind in the world and the first in Japan —was recently completed at the Tsurumi shipyard of the Nippon Kokan K.K. (Japan Steel



& Tube Corp.) and delivered to the Maritime Safety Agency. A catamaran fireboat is still a rarity in the world, and Japan's Maritime Safety Agency is the first public organization in the world to own such a fireboat.

The 190-gross-ton ship, measuring 27.5 meters long and 10.4 meters wide, mounts a 2,200-horsepower engine capable of 13.2 knots. It can discharge water or chemical foam from seven nozzles. The biggest characteristic of the catamaran fireboat is that it is highly mobile and can take appropriate action in an instant at the scene of fire. For instance, it can turn round by 360 degrees on the same spot by revolving right and left propellers in opposite directions. Moreover, it has better stability than a single-hull vessel, making it possible to build a high tower on the deck. The Hiryu has been assigned to Yokohama Port to cope with any fire of giant tankers, which are entering the port in growing numbers. The photo shows the Hiryu conducting a water discharge test.

Electronic Abacus

Hayakawa Electric Co. recently announced the new electronic abacus "Microcompet" (photo) using ELSI (extra large scale integration) would be put on the market in August. It is a midget, light-weight calculator capable of addition, subtraction, multiplication and division alone unlike the electronic desk computer with a memory device for complicated calculations. Weighing only 1.4 kilograms, it measures 7.2 centimeters thick, 24.7 centimeters long and 13.5 centimeters wide. Hayakawa Electric says the small calculator will be mainly exported to Europe and North America, which have no such simple calculating tools as Oriental abacus. It also intends to sell the calculator on the domestic market to replace motor-driven and hand-operated adding machines as well as abacuses at stores and other places.

The manufacturer will complete a plant capable of turning out 20,000 units of the new calculator per month in May. Monthly production will be 13,000 units initially and increased to 50,000 units by the end of next year. Price remains to be fixed. But the company said the domestic price will be around 110,000 to 120,000 yen.



Switchboard for the Blind

The Nippon Telegraph and Telephone Public Corporation has recently granted an application for a certificate filed by the Vocational and Life Training Center for the Blind in Osaka with regard to a new telephone switchboard for the blind. This means the corporation has recognized the technical feasibility of the new machine (photo).

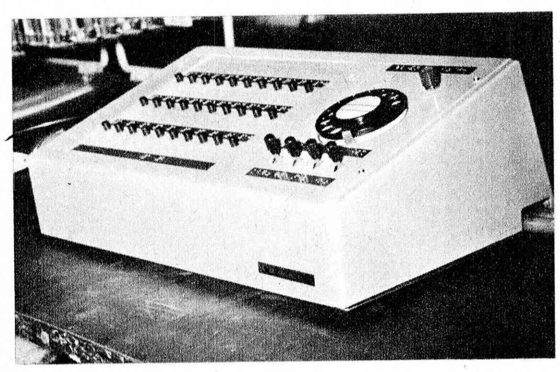
The center, designed to give vocational training to the blind who have finished school education, started training telephone operators in 1967 and using them for interphone

service in March last year by partially remodeling a switchboard for ordinary people. But since this switchboard was rather inconvenient for the blind operators, the center asked the Nakayo Communication Apparatus Co. of Tokyo to develop a new switchboard specifically for the blind.

The operator of the ordinary switchboard notices its various signals either by blinking lamps or buzzers. But the newly developed switchboard indicates them by protruding metals like the lead of pencil or buzzer sounds of various pitches. The blind operator can differentiate between interphone calls, and incoming or outgoing calls by sound and finger touch alone. When a call signal sounds buzzer and the metal bar of the number called juts out, the operator responds by touching the metal bar and pressing the right button.

The new switchboard for the blind is a small-capacity type with five lines for outgoing or incoming calls and 30 lines for interphone calls. Therefore, it can be operated without the certified qualifications for telephone operators. But the operation of larger-capacity switchboards necessitate passing the qualifying test of the public corporation.

In the past, blind people have been virtually barred from taking the test. But in expectation of the development of large-capacity switchboards for the blind, the corporation has decided to lift the restriction provided there will be no hitch in the actual switching of telephone calls.



TRADITION

"Koinobori" (Carp Streamer)

March 5 is Children's Day, a national holiday. For some time centering on this day, paper or cloth streamers in the shape of carp are hoisted over roofs or on tall poles in both urban and rural areas.

This time-honored tradition is a conspicuous symbol of Boys' Festival, celebrated for centuries on the fifth day of the fifth month along with Dolls' Festival for girls on March 3. Carp is known among the Japanese public as a fish with great courage and strength. Carp streamers, therefore, are put up to celebrate and pray for a healthy growth of boys. This day was rechristened Children's Day after the war. But few families including only girls display carp streamers just as Dolls' Festival on March 3 is hardly observed at homes including no girls.



Large carp streamers measure more than 10 meters long. The richly colored streamers fluttering in the blue sky impresses one as manly and brilliant or just the way boys are hoped to grow.

In olden times, *koinobori* used to be presented by relatives as gift to mark the birth of a boy. Nowadays, a set of *koinobori* costs as much as does an electric refrigerator, and a son's request for *koinobori* is apparently a headache for many a parent. More carp streamers are seen fluttering in rural areas than in urban centers. This is supposed to be partly because old *koinobori* have been handed down from generation to generation and partly because farmers' income has been on a sharp upswing in recent years. Photo shows a giant *koinobori* rarely seen in Tokyo.

PHILATELY

Commemorative Stamp "Hair" Proves Popular

Japanese commemorative stamps are valued highly among philatelists both at home and abroad for their excellent printing technique. And a new commemorative stamp, which went on sale on April 20 to mark this year's Philatelic Week, has especially caught on well. This is the fifth in the "Beauty Picture Series" of stamps sold annually on the occasion of the Philatelic Week.

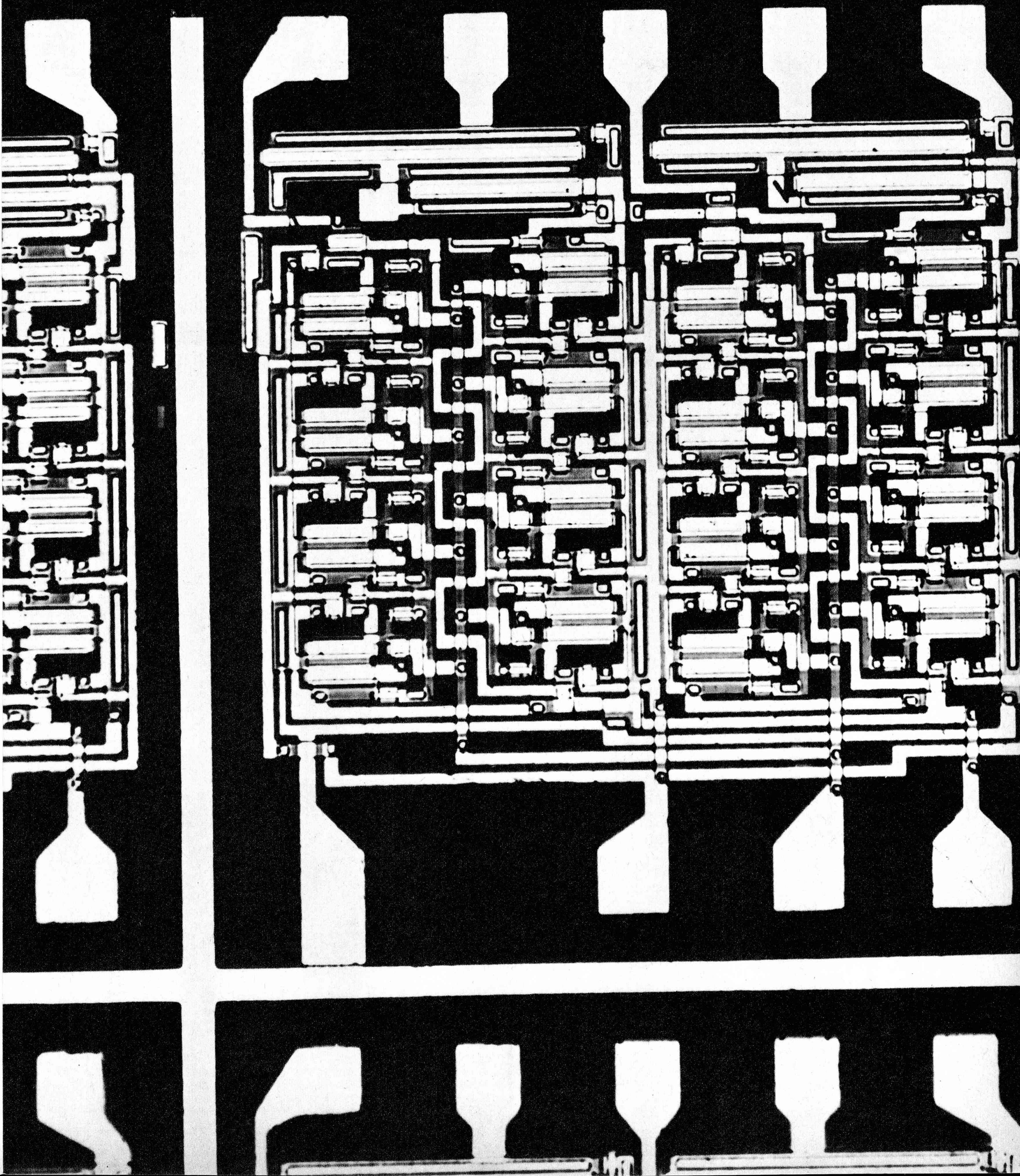
The stamp design is based on the picture "Hair," a masterpiece of Kokei Kobayashi, a noted Japanese painter. The picture, done in 1931, depicts with grace two sisters in a warm family atmosphere, one combing the hair of the other. The 15-yen stamp measures 33×48 millimeters. Photogravured in five colors, 31,500,000 copies have been issued.

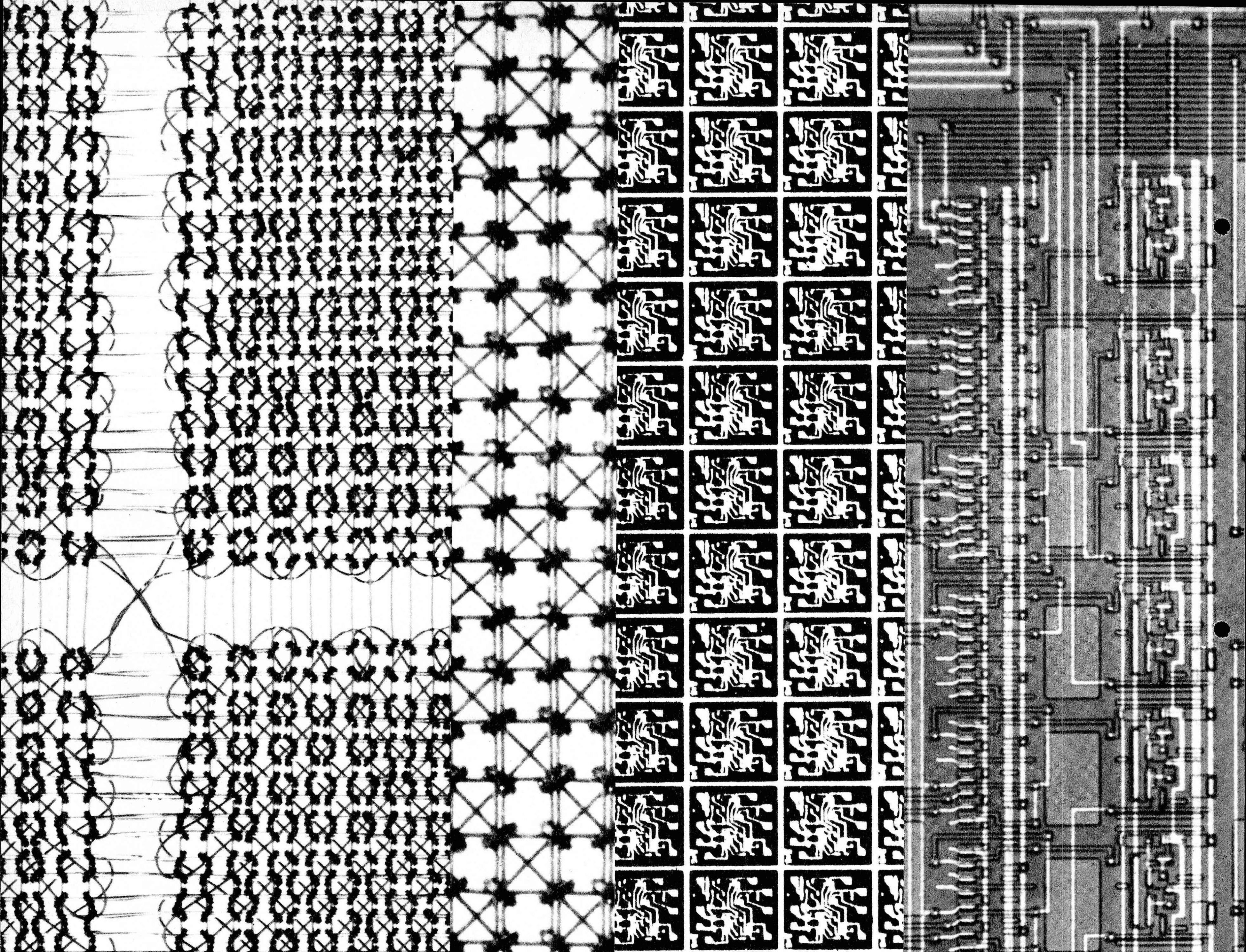
Originally, the Postal Services Ministry planned to issue 30 million copies. But prior to their sale, the new stamp won a really explosive popularity because it was the first stamp of a semi-nude picture to be issued in Japan. This led the ministry to increase the number of copies by 1,500,000. This is the first time in five years since the Tokyo Olympic stamp was issued that the number of prints has been increased before the start of commemorative stamp sale.



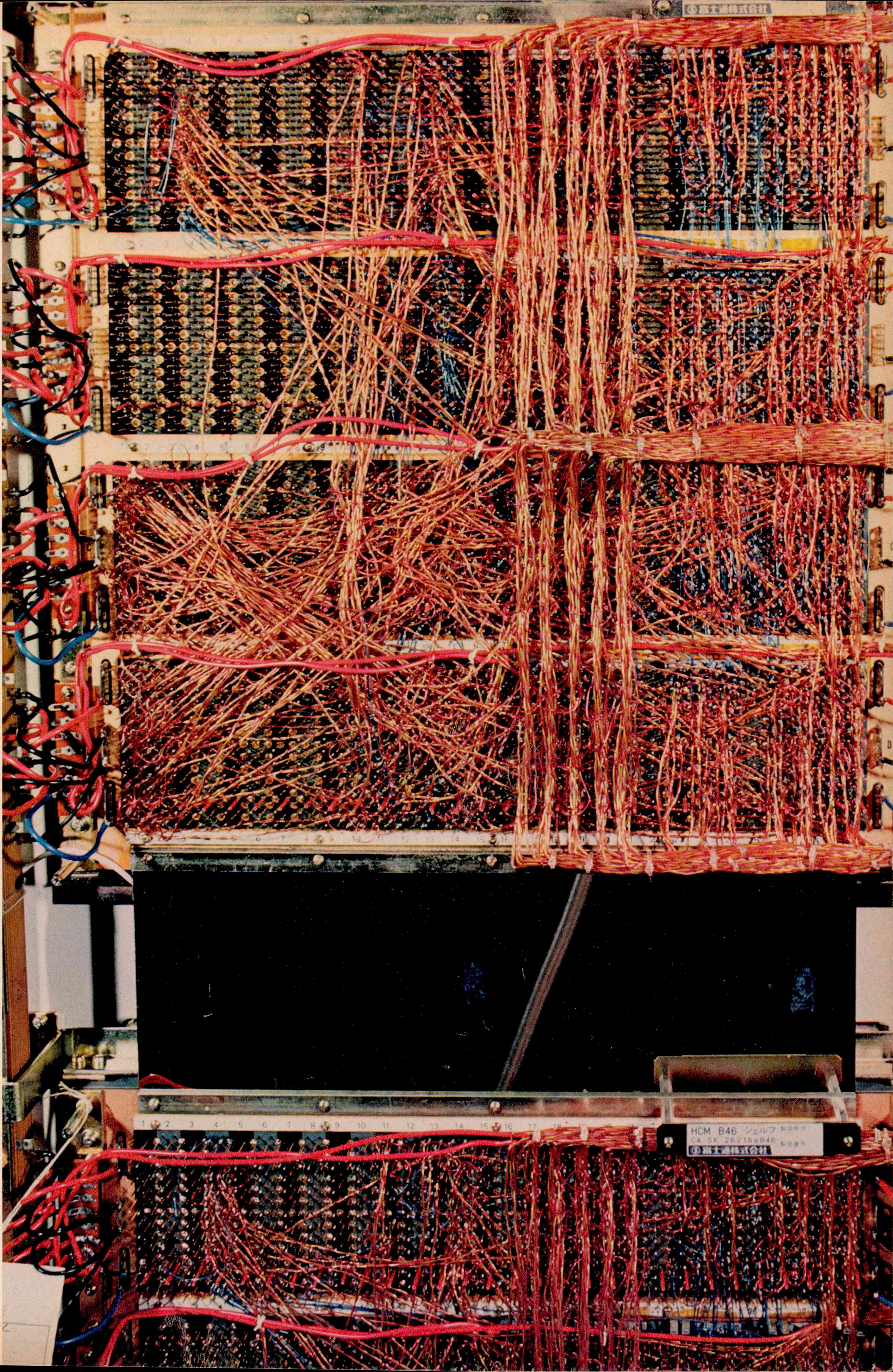
COMPUTERIZATION MAKES HEADWAY

In Japan, a "computer revolution" is making swift advance. Already, Japan is second only to the United States—the motherland of computers—in the number of computers in operation, "software" (computer using techniques) and computer production capacity. Corporate management, technical development and academic research, governmental administration and every phase of the people's daily life in Japan can no longer be considered without computers.





Two photos on the left are enlarged pictures of core memory, which corresponds to the brain cells of human being. The second photo from right and one on the preceding page are enlarged pictures of IC (integrated circuit). The practical application of IC has not only reduced the size of computers markedly, but also enhanced the performance of computers, such as capacity of operation, in large measure. Photo at the right end represents an enlargement of LSI (large scale integration), a further improvement over IC. Color photo shows the complicated wiring in an electronic computer, which corresponds to human nerves.


HCM B46 シェルフ

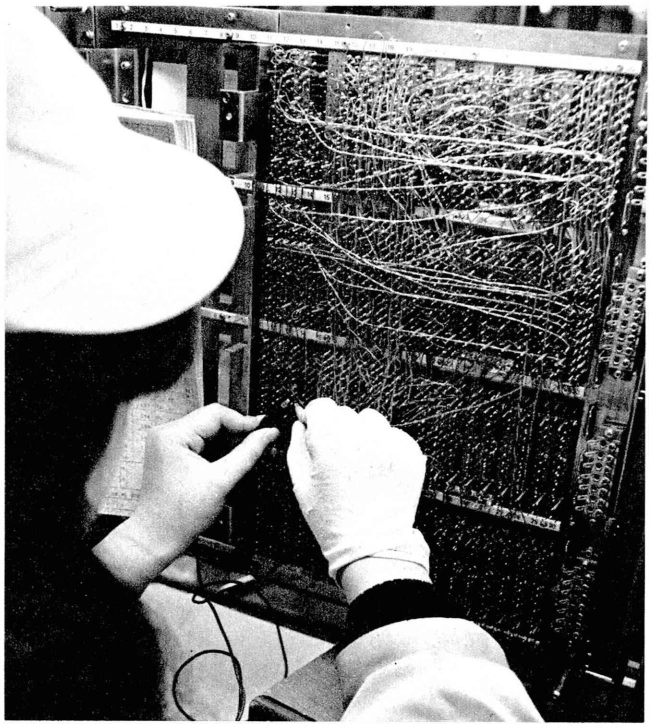




Electronic computer assembly plant in Kawasaki of Fujitsu Limited. Here FACOM Series, Japan's representative computers developed by purely domestic techniques, is turned out one after another. Left: Final test of computer is conducted after repeated tests of component parts. Below: Since component parts of computers are very small, the mounting of print circuit board is done with the aid of magnifier.



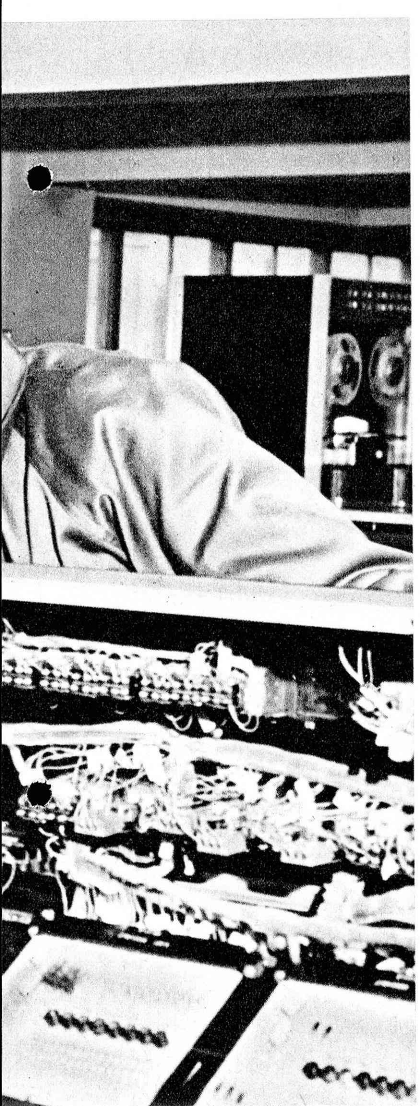






Top and right: The final stage of computer assembly-ing at the Fuchu Plant of Nippon Electric Co. Varied computers, large and small, are sent out in quick succession. Above: Wiring work at the Kawasaki Plant of Fujitsu Limited. The wiring in a computer is also determined by a computer. Young people account for majority of technicians at each computer plant.





EVER-WIDENING SCOPE OF COMPUTER USE

THE expressions "information society" and "information industry," which came into use early last year, have now apparently become common with the Japanese public of late. Then what does "information" means in these expressions? As to this basic question, various opinions were voiced by leading intellectuals and experts for a time. In brief, however, "information" may be defined as that which is expressed in some way or other and which individual persons or enterprises can use as reference materials to saitsfy and advance their intellectual desires and by so doing, can determine their activities of tomorrow. Information is either data per se or the result of the adjustment and analysis of data which in themselves are of no use.

Nowadays, the advance of science and technology has narrowed the world, and the scope of activities of individual persons and enterprises has become global. Human beings, enterprises, governmental and other public authorities, schools and other institutions produce a large variety of information. And the users of this then turn out processed information. Indeed, we find ourselves in a spate of informaiton. And it is electronic computers that are playing a vital part in adjusting, processing and analyzing such a torrent of information.

According to the statistics compiled by the Japan Electronic Computer Co., Ltd., the sole rental agent for Japanese-made computers, computers in operation in this country as of the end of September 1968 aggregated 4,171 sets valued at approximately 1,000 million dollars, including foreign-made machines. They are actively used in almost all spheres of human activity, including private businesses, educational institutions, hospitals and government offices. The United States is by far the biggest user of computers with several tens of thousands of sets in operation. Among other advanced nations, however, Japan is the most active user of computers along with West Germany (4,150 sets worth about 1,200 million dollars), Britain (3,020 sets worth about 900 million dollars) and France (2,975 sets worth about 900 million dollars). (These figures as given by the International Federation for Information Processing Societies were as of the end of December 1967).

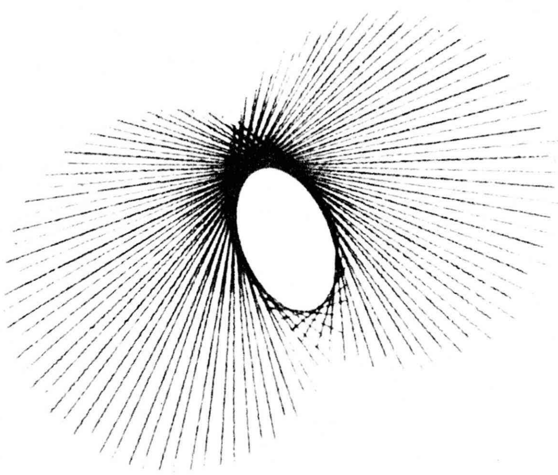
"Green Windows" for reservation of train seats are a familiar sight for passengers of Japanese National Railways. Train seats memorized by the computer system for this instant booking service number as many as 330,000 a day. That is, tickets for as much as 95 per cent of all reserved seats are sold on an "on-line, real time" basis. This system connecting eight sets of computer equipment manufactured by Hitachi, Ltd. and about 1,000 terminal devices at main stations and Japan Travel Bureau offices throughout the country is highly popular among passengers for its prompt and accurate booking service.

The Japan Air Lines (JAL) is also a pioneer in the use of computers. Most renowned in the national flag carrier's wide-ranging mechanization is the JALCOM seat reservation system, which links a medium-sized computer system, manufactured by the Nippon Electric Co., with terminal devices at 54 offices in Japan and 62 offices abroad by communication lines. At present, this prompt, accurate "on-line" booking service handles more than 20,000 cases of seat reservation on a daily average. A seat for a domestic flight can be reserved in only four seconds, while a global network of teletype services enables reservation for an internatinal flight to be made from every part of the world. At the moment, JAL is working out plans to expand the reservation system by installing terminal devices of Braun tube indication type at principal branch offices and airports throughout the world so that international flights may also be put on a prompt booking basis.

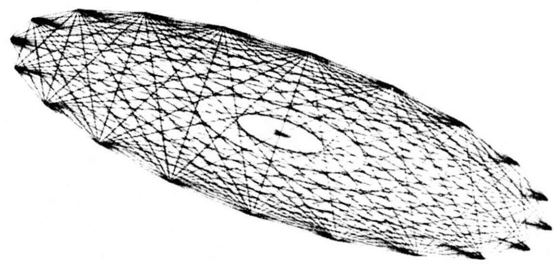
LAST spring, the 36-story Kasumigaseki Building, standing 147 meters high, was completed in a section of office quarters in downtown Tokyo. And this highest building in Japan, it may be said, is also a product of computers. Since the Great Kanto Earthquake of 1923, construction of buildings with a height of over 31 meters was banned by law in Japan. But an earthquake simulation test by computers has proved that a high building, if built with an appropriate structure, can absorb quake vibrations and is thus safer. The Kasumigaseki Building has the so-called "flexible structure" capable of absorbing earthquake tremors. As a matter of fact, it safely weathered two relatively big tremors, which struck Tokyo in May and July last year. Needless to say, computers also played an important part in the actual designing of the building and the scheduling of construction work. The Kasumigaseki Building has served as a sort of touchstone, and its success has triggered a rush of applications for permission to build similar multi-story structures in the Metropolis.

In addition, computers are serving as the prime mover for the modernization of management in all segments of Japanese industry, such as shipbuilding, which accounts for the largest share of tonnage annually built in the world, the iron and steel industry, which boasts the third largest production in the world, the automotive industry, which has made rapid strides in recent years, the electronics industry, which ranks second only to that of the United States, and the electric power industry, which is filling fast growing energy needs.

Banking service, which supplies funds to industry and assists in transactions between industries and individuals, was one of the first sectors to embark on mechanization in Japan, along with insurance firms and securities dealers. In July last year, 63 local banks under the guidance of the Local Bankers Association instituted a data communication service, which transmits their mutual bill clearing data to the central computer center for "on-line" processing. Under this system using two sets of large-sized computer systems, made by Fujitsu Limited, data transmission service is provided by the Nippon Telegraph and Telephone Public Corporation. This large-scale system—the most advanced of its kind in the world—connects as many as 4,363 branches of the 63 banks. Meanwhile, individual banks have also started to adopt a computerized "on-line" method for the management information and the service systems for customers. Already, it is becoming possible to deposit or withdraw money at banks without a passbook under the "customer's card" system linking an computer with all bank branches. And this has enabled city banks to invest in and form business tie-ups with credit card companies.



MEANWHILE, the Japan Broadcasting Corporation (NHK) has recently completed the Total Online Program and Information Control System (TOPICS), the most advanced automatic control system for broadcasting programs in the world. The new system, already in operation, has fully automated the arranging as many as 1,800 programs per week, which has so far been done by 1,000 directors and 2,700 technicians keeping in touch with one another by telephone and other means. Indications are that the system will induce commercial broadcasting stations to adopt a similar system of rationalization one after another in the next two or three years. Moreover, newspaper companies and news agencies boasting worldwide coverage—one of Japan's characteristic institutions—have also started to give serious consideration to utilizing computers for the comprehensive control of their activities and for working out a managerial strategy.

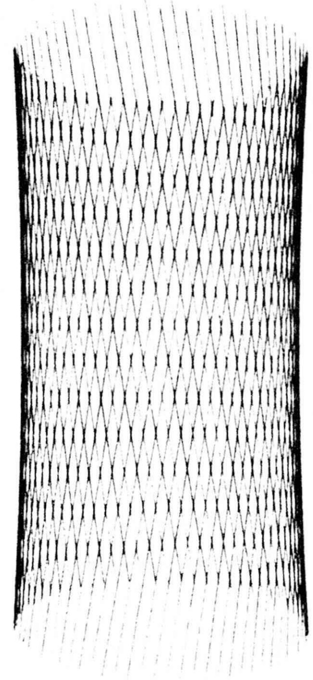


The Government and local public bodies, on their part, have long been using computers to handle a tremendous amount of administrative work and to make up for a shortage of labor. Of late, a mood has been mounting among them for a mutual utilization of data where possible by strengthening the ties of mutual liaison. Under direct instructions from Prime Minister Eisaku Sato, the Administrative Management Agency has begun to study how best to achieve such a system. Meanwhile, the Study Society for Utilization of EDP (Electronic Data Processing) System of Government Offices has been set up within the Agency of Industrial Science and Technology, the Ministry of International Trade and Industry, as a techncial advisory body for standardization with a view to pooling the best ideas of all government offices concerned.

At the Japan World Exposition, Osaka, 1970 (EXPO '70) to be held at the Senri Hills in the suburbs of Osaka next year, four sets of large-sized computers to be delivered by Hitachi, Ltd. and Tokyo Shibaura Electric Co. (Toshiba) will be installed to handle all manner of information services by means of data communications. The Nippon Telegraph and Telephone Public Corporation, entrusted with this task, is now busily making elaborate preparations. Under the system, the computers will be linked with about 1,000 units of terminal equipment installed throughout the fair site to provide "on-line, real-time" information services regarding diverse matters, such as exhibits, entertainment and other main events, incoming and outgoing visitors, congested areas, parking areas, stray children, lost articles, waiting persons and control of water supply and sewerage.

At Japan's public race-courses, meanwhile, the totalizator system, incorporating small-sized computer, as developed by Fujitsu Limited, has markedly enhanced the efficiency of pool ticket sales. Inquiries on this electronic computer system have arrived in succession from New Zealand, Singapore and other countries, resulting in export negotiations.

In January this year, Toshiba unveiled a small-sized computer system for medical diagnosis, developed jointly with the Applied Electricity Laboratory of Hokkaido University. This system, connected with electrocardiograph and other medical apparatus, enables the doctor to have a "dialogue" with the computer through a small Braun tube indicator and a typewriter in regard to clinical diagnostic data. Meanwhile, the Medical Department of Tokyo University has developed a "mathematical model" system using a computer to pinpoint the position of brain tumor through a statistical analysis of clinical data. This system, it is claimed, ensures far greater accuracy than the conventional method based on the sixth sense.



IN this way, the scope of computer application is widening incessantly, and the daily life of the Japanese people can no longer be considered without computers. A study of the general outlook for the next one or two decades from this angle gives us the following picture of Japan to say the least of it.

As Herman Kahn, an American scholar, has predicted, the Japanese economy will keep on growing at a fast pace in the years ahead. And this is bound to bring a phenomenal increase in the amount of information. According to a comprehensive national development program as mapped out by the Economic Planning Agency with 1985 as the target year, the present superexpress New Tokaido Line will be extended northward to Sapporo, Hokkaido (by way of the projected Seikan undersea tunnel) and southward to Fukuoka, Kyushu. Besides, the national



The three photos on the left page are scenes from a television commercial of a synthetic fiber maker. Production of the commercial was left to a computer.

"Green Window" at Tokyo Station with a row of terminal devices. Within 30 seconds, the equipment confirms whether the specified seat is already reserved or not. If the seat is available, a specifying ticket is automatically printed and issued..

budget will include appropriations for the establishment of a nationwide information network of data communications. At the same time, the Government will take measures to encourage private activities in this field.

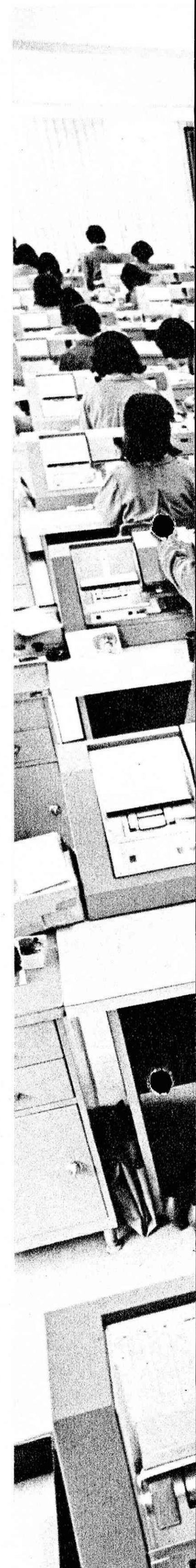
Upon completion of this information network for free use of communication circuits, various kinds of terminal equipment, such as telephones and Braun tube indicators, will enable offices, university laboratories and general homes to obtain the services of large-sized computers freely. (It will probably be 10 to 20 years before this service is made available to homes.) The wide-ranging services of this system will include the processing of business data, scientific calculation and discovery of desired information. The Nippon Telegraph and Telephone Public Corporation is already preparing to start public data communication and data processing services in three key cities—Tokyo, Osaka and Nagoya—in 1970. Meanwhile, exchange of information will become possible between computers of universities and between those of enterprises as occasion demands.

And it is Japanese makers of electronic computers that are serving as mainstays of the fast expanding information activities in this country. (At present, there are six makers in this field—namely, Fujitsu, Nippon Electric, Hitachi, Toshiba, Oki Electric Industry Co. and Mitsubishi Electric Corp.) Japan lagged 10 years behind the United States in starting the production of electronic computers. But Japanese computer makers have since made impressive strides under the vigorous policy of encouragement by the Ministry of International Trade and Industry as well as through their own untiring efforts. And now, in face of powerful competition from the world's top maker IBM, they have secured a substantial share of the Japanese computer market, accounting for 49.9 per cent in value and 71.7 per cent in number of all electronic computers now in operation.

In a bid to forge ahead in this field, the ministry and domestic manufacturers are making concerted efforts to complete a super-sized time-sharing electronic computer—the most advanced in the world—by 1971.



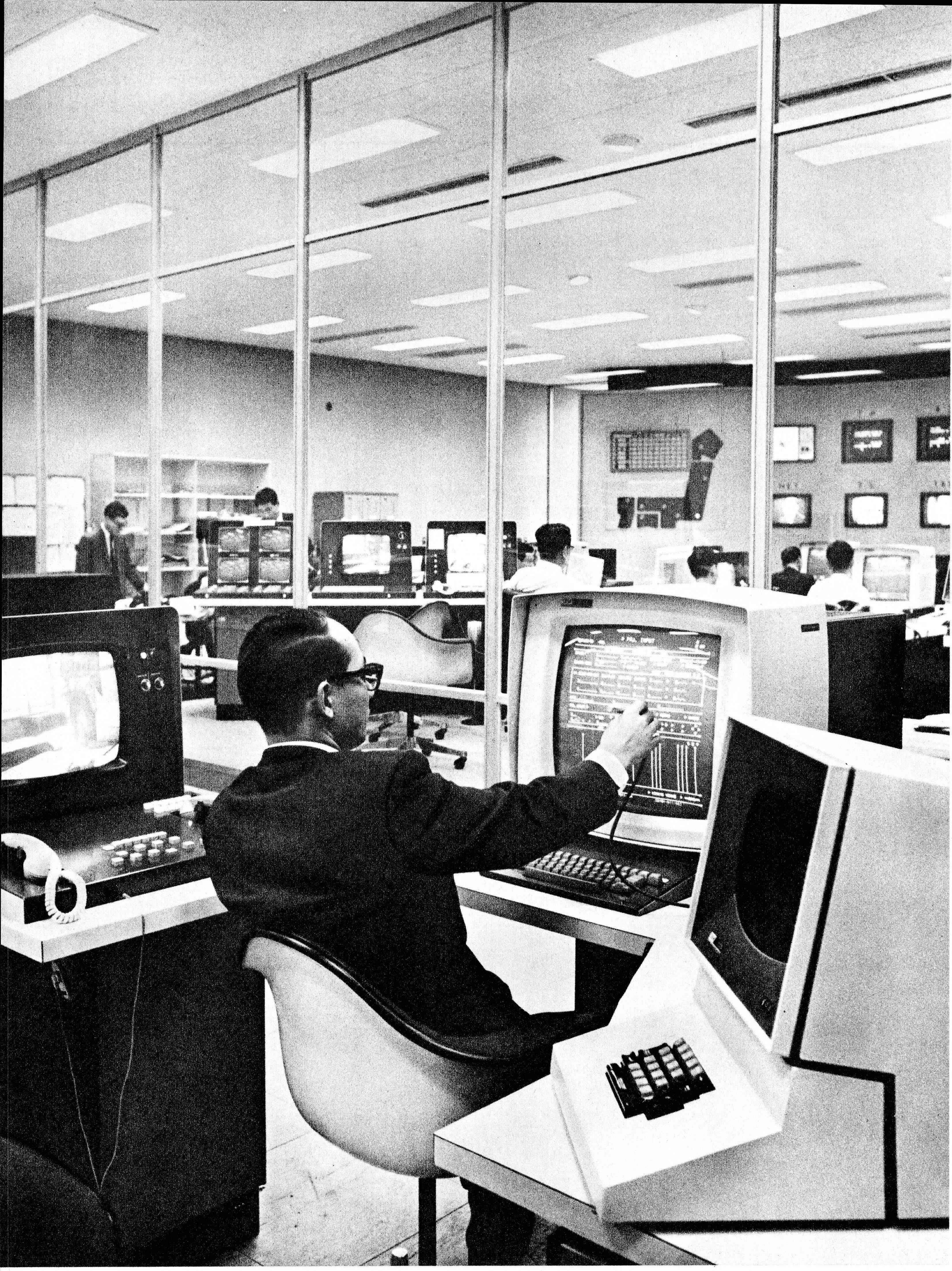




Above: Data Communication Center of the Local Bankers Association, located in Ginza, Tokyo. This is the heart of the most advanced data communication system, connecting the 4,363 offices of 63 local banks.

Left: Training at a computer school. Foreigners are seen among the students. The rapid spread of computers has caused a chronic shortage of programmers and system engineers. As a result, computer schools are mushrooming in Tokyo. Below: Punch Card Room of Asahi Life Insurance Co. with a row of terminal apparatus of computers. The life insurance industry is most advanced in the use of computers.





Broadcast Control Center of NHK-TOPICS (Total On-Line Program and Information Control System), a broadcasting program preparation and sorting system based on the electronic data processing system. Wanted information is instantly indicated on the Braun tube if only the corresponding button is pushed. NHK-TOPICS is engaging keen attention as an epochal achievement in the technology of computer use.

Photos by Masamichi Sumiyoshi, Fujitsu, NEC, Hitachi and NHK.

Invitation to Japanese Dishes



Fresh ingredients and the sense of season are the soul of Japanese dishes all the year round.

DISHES IN WIDE VARIETY

"The human being is an animal that eats everything," it is said. In this sense, the Japanese may well be called extremely human. They consume all manner of food from all the corners of the earth, and perhaps their healthy appetite may be one source of their remarkable vitality.

This trend has become more pronounced with the expansion and speedup of modern means of transportation. The Japanese eat every kind of Oriental and Occidental dish, to say nothing of their own foods. And ingredients for nearly all these foods are produced in Japan.

In this country today, you can taste not only regular French dishes, but also British, German, Italian, Russian and other Western foods, including American snacks and even the Viking dishes of Scandinavia. As for Chinese dishes every type of cuisines is available, including dishes peculiar to the various provinces of China as well as the two major styles—that is, Peking and Canton. Korean dishes are also highly popular with the Japanese public. Moreover, special restaurants for southern dishes—Indian, Indonesian and Polynesian—flourish in the big cities.

INGREDIENTS OF JAPANESE DISHES

With regard to Japanese food, few types have existed in this country since before the dawn of history. Almost all—even rice, a staple food—have come from across the seas and were completely acclimatized by the people.

In the cooking of fish and shellfish, Japan is literally unexcelled partly because other nations have displayed less interest in these foods. *Tempura,* already world-renowned as a typical Japanese cuisine, was originally the imitation of Portuguese cuisine. But the Japanese have made it a representative dish of this country through the skilful use of a rich variety of fresh materials available in abundance. *Sukiyaki* has also won high acclaim among the gourmets of Western nations with a long history of cattle raising, because the Japanese have succeeded in the production of superb beef through a special elaborate method.

A major characteristic of Japanese dishes, it may be said, consists in tasting fresh ingredients rather than their processing and cooking.

SENSE OF SEASON AND WATER

The Japanese archipelago extending like a festoon from northeast to southwest is virtually floating amidst an abundance of fish and shellfish. While eating such food all the year round, the Japanese have found even the same dishes taste different from season to season. As a result, the idea of *shun* (food in season) forms an important element in the Japanese culinary art. Moreover, the Japanese people, who thus live amid marked seasonal changes, have come to attach great value to the sense of season in the preparation of foods.

Japanese culinary art, keynoted by the sense of season and the idea of *shun,* has developed in a very unique direction totally

Photos by MICHIO NOGUCHI

different from the West European dishes, which place importance upon elaborate cooking and processing of mainly meat, American dishes relying upon canned foods and the Chinese dishes using dried materials. One of major factors in the preparation of Japanese food is water of high quality. The taste of fresh water in Japan, it may be said, has contributed largely to refining the palate of the people, thus forming a basis for the superb flavor of Japanese dishes.

Water is also a key element in the manufacture of Japan's traditional seasonings, such as *shoyu* (soy sauce), *miso* (bean paste), vinegar, *sake* and *mirin* (sweet sake), which are indispensable in Japanese food. All have one thing in common—that they are brewed from malt.



TABLEWARE AND SERVING

The beautiful appearance of food served in appropriately attractive dishes is of great importance in Japan. Of course, there is a difference in the manner of serving food in restaurants and the home, but in both cases, the aim is a psychological effect on taste. What is sought is a harmony between various dishes and the served food for the attractive shapes and colors of what the food is served in, and on, gives an added fillip to the appetite.

Japan's exquisite pottery and lacquer wares have produced exquisite tableware and utensils, elevating them to the level of object of art. But this has apparently occasioned a misunderstanding and some seem to think Japanese dishes are essentially for visual appreciation.

BILL OF FARE

The simplest Japanese bill of fare is *ichiju issai*—that is, soup and one dish plus boiled rice. This is mainly for breakfast. *Ichiju sansai*—namely, *ichiju issai* plus two more dishes—forms the basis of the Japanese meal. The three represent foods prepared by three different methods—to wit, raw food, such as *sashimi* (sliced raw fish), broiled fish or meat, and boiled foods, such as vegetables. With the addition of diverse variations, the number of dishes increases to seven or nine in the case of a banquet.

In Japan today, however, meals centering on certain single dishes are more popular than such formal, full-course ones. For instance, *tempura* and *sukiyaki* constitute independent meals. In recent years, however, traditional dishes peculiar to various localities have won widespread popularity. Many restaurants in big cities collect fresh ingredients from all parts of the country and serve such traditional foods amid a suitable rural atmosphere exuded by special architecture.

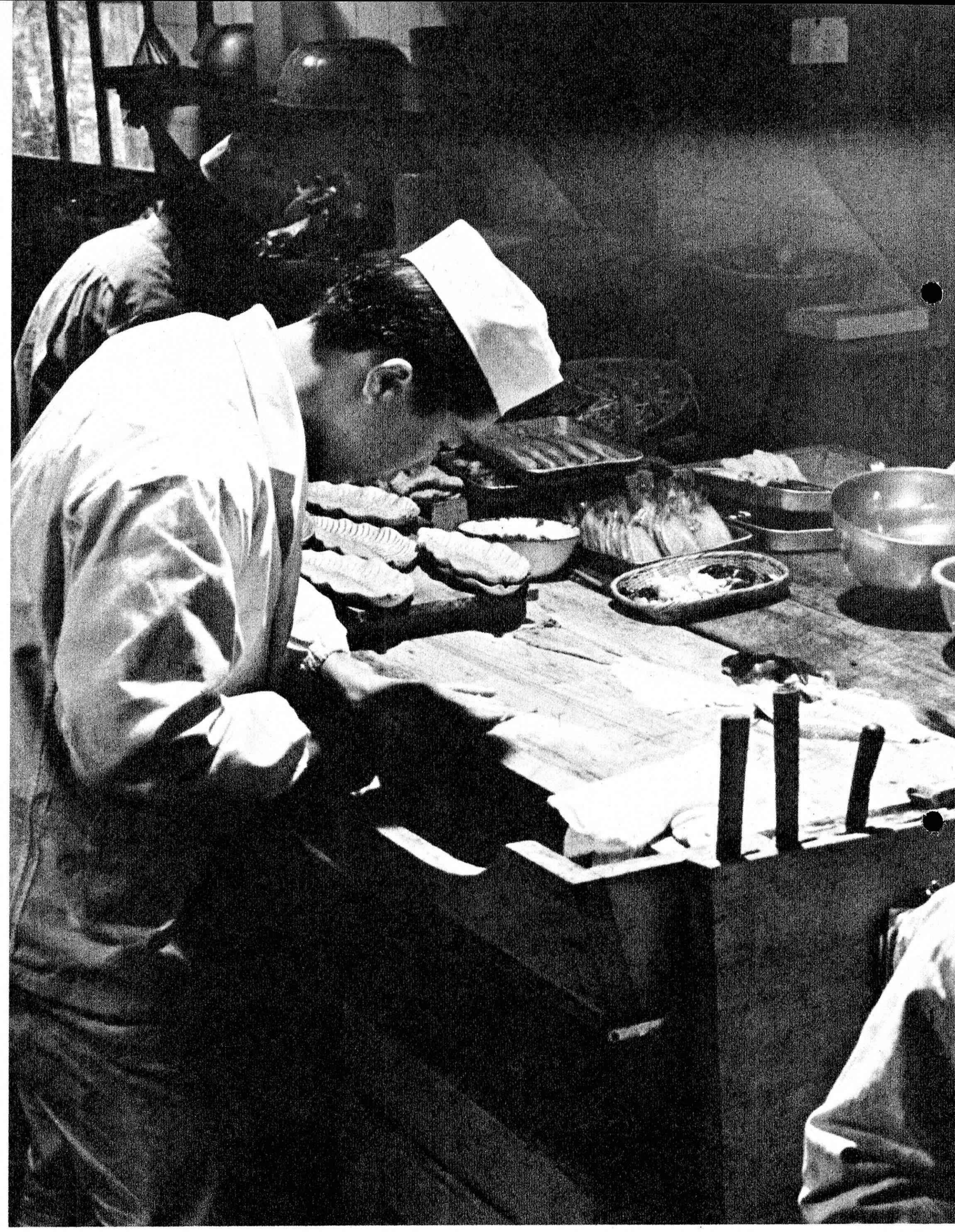
If a foreigner visiting this country wishes to enjoy Japanese food, he should first try *sukiyaki* and *tempura*. These will never fail to satisfy the Westerner's palate and create a new lover of Japanese dishes. He may then proceed to enjoy the exquisite taste of formal dishes served with their attractive tableware. And if he takes a liking even to *sushi* (hand-rolled rice and raw fish) and rural food, then he may well be called a full-fledged appreciator of Japanese cuisine.

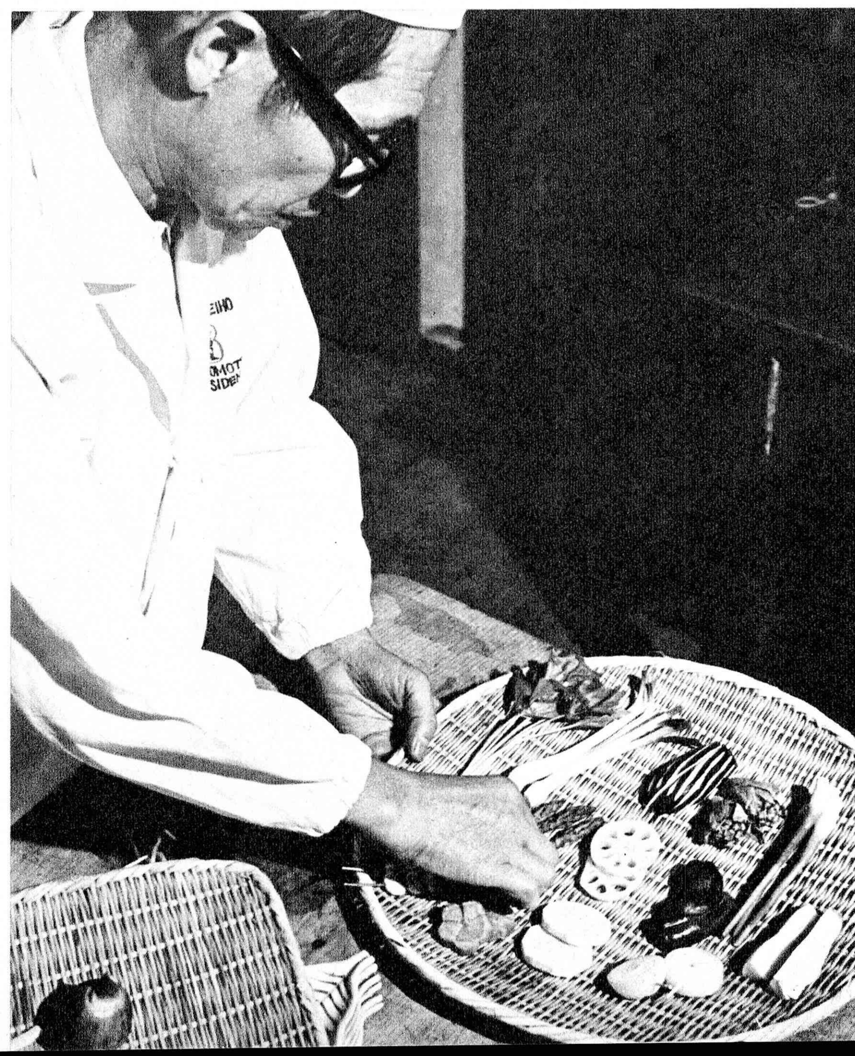
Left: Porch of a Japanese-style restaurant. It is symbolic of the taste of Japanese dishes.

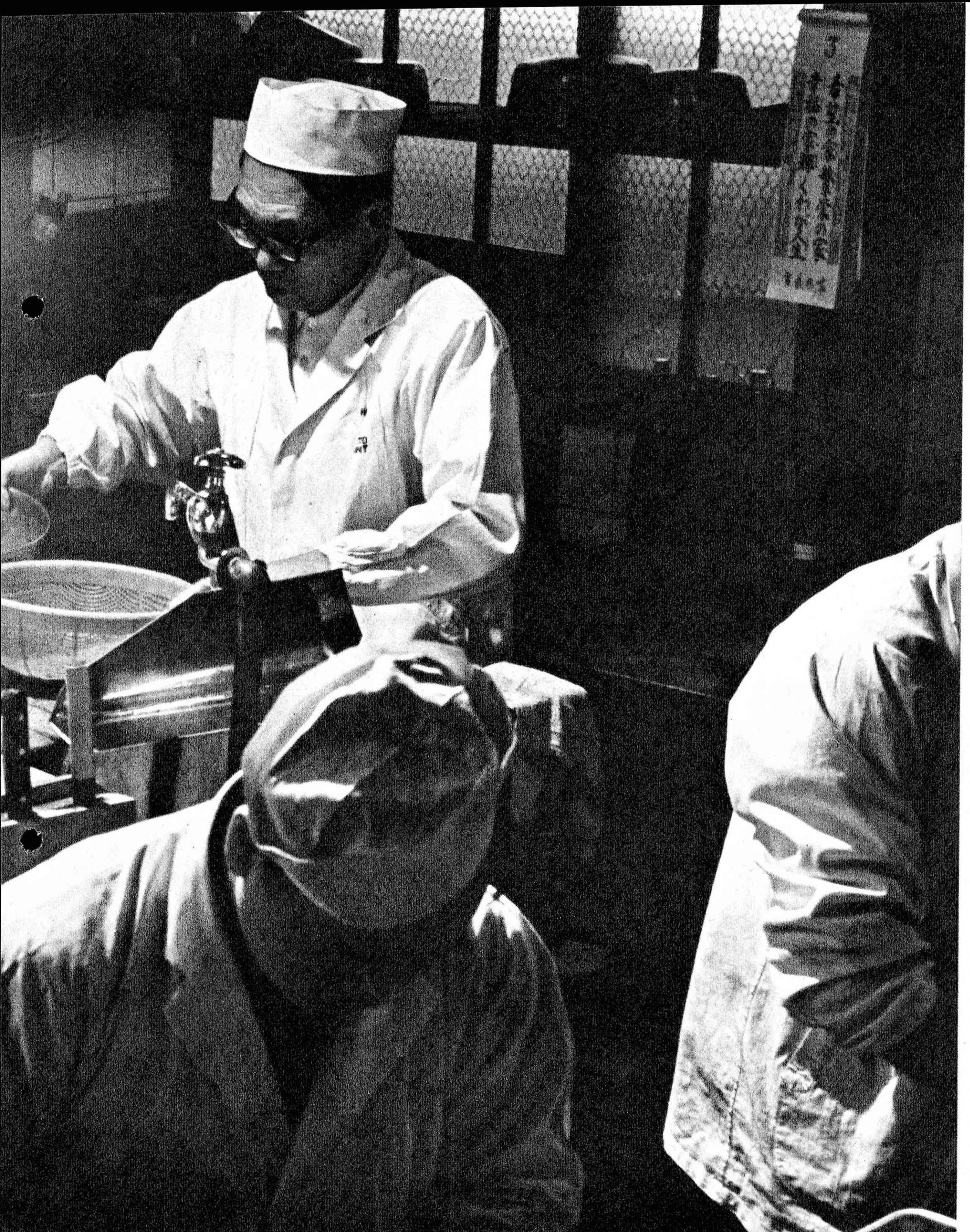
Color page, top: A full-course dinner made up of hors d'oeuvre, nine dishes and dessert. Bottom: "Sukiyaki" enables full enjoyment of Japanese beef, recognized as best in the world.

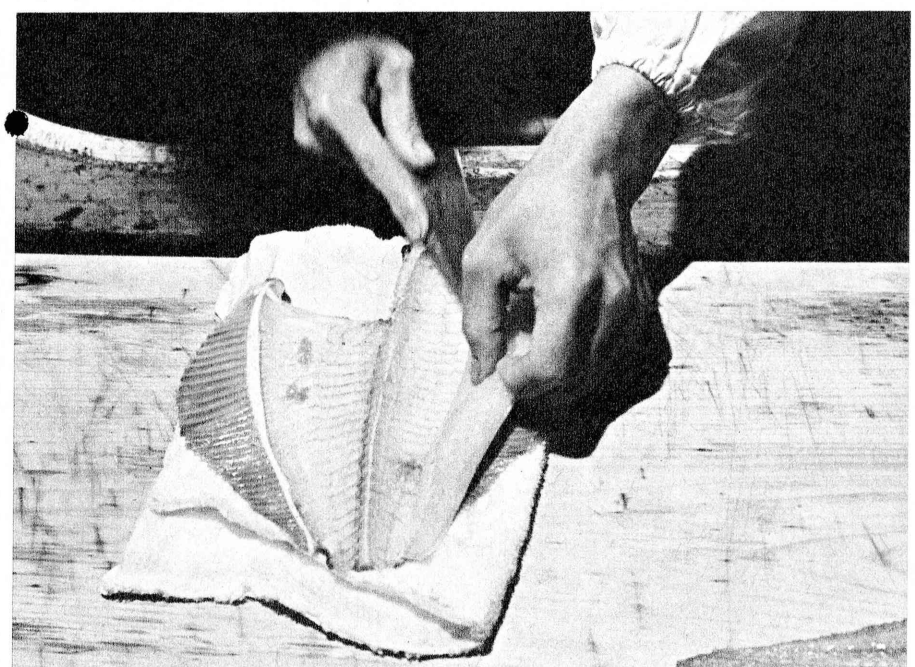










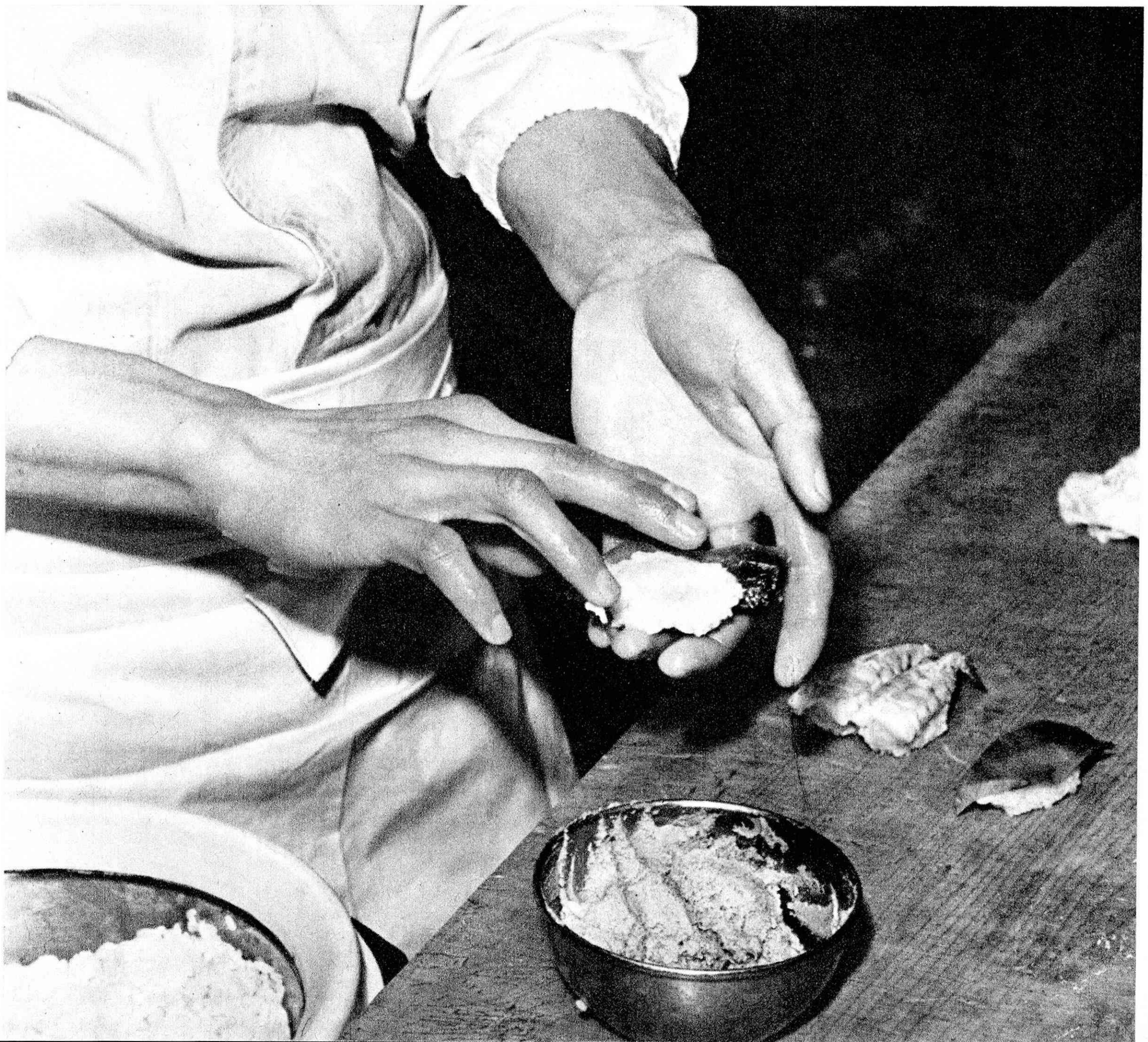


More than just good taste is expected of a cook. He produces a work of art through a harmony between fresh materials and vessels.









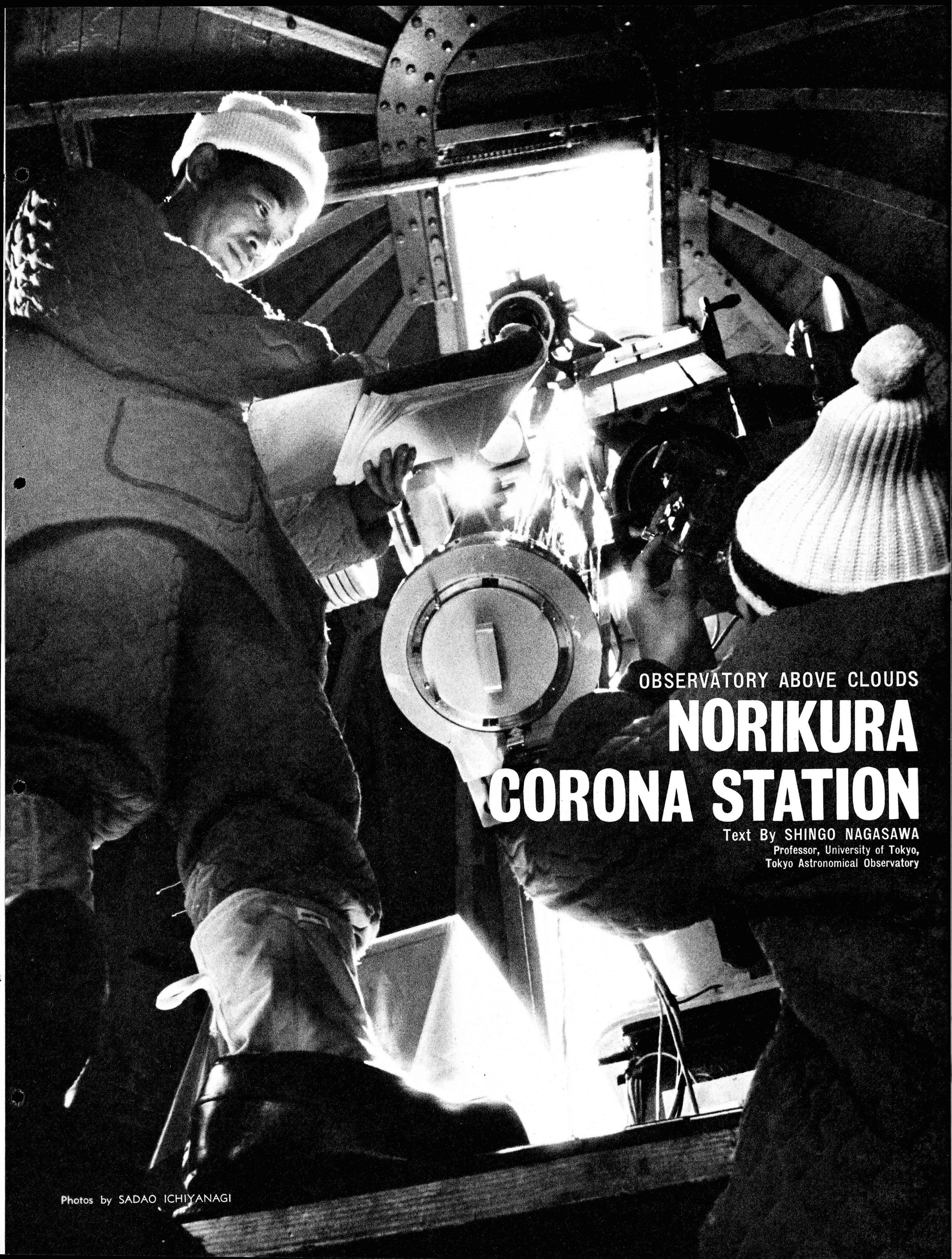
The best way to taste "sushi" and "tempura" is to minimize the time between a cook's hands and the mouth of a guest. So they are prepared one by one in front of the guest according to his order. Above photos are at a counter of a "sushi" shop and below two photos are at a "tempura" restaurant.



The beautiful figure of a plate is seen through the thin "sashimi" slices of fish.

Photographs in this article have been taken with the cooperation of the following restaurants in Tokyo:

Hamaseiho	(Tempura, Sukiyaki)	Tel. 771-5185
Ima Asa	(Sukiyaki)	Tel. 572-5286
Inagiku	(Tempura)	Tel. 661-8855
Ranka-sushi	(Sushi)	Tel. 584-5387
Ten-ichi	(Tempura)	Tel. 571-1785



OBSERVATORY ABOVE CLOUDS

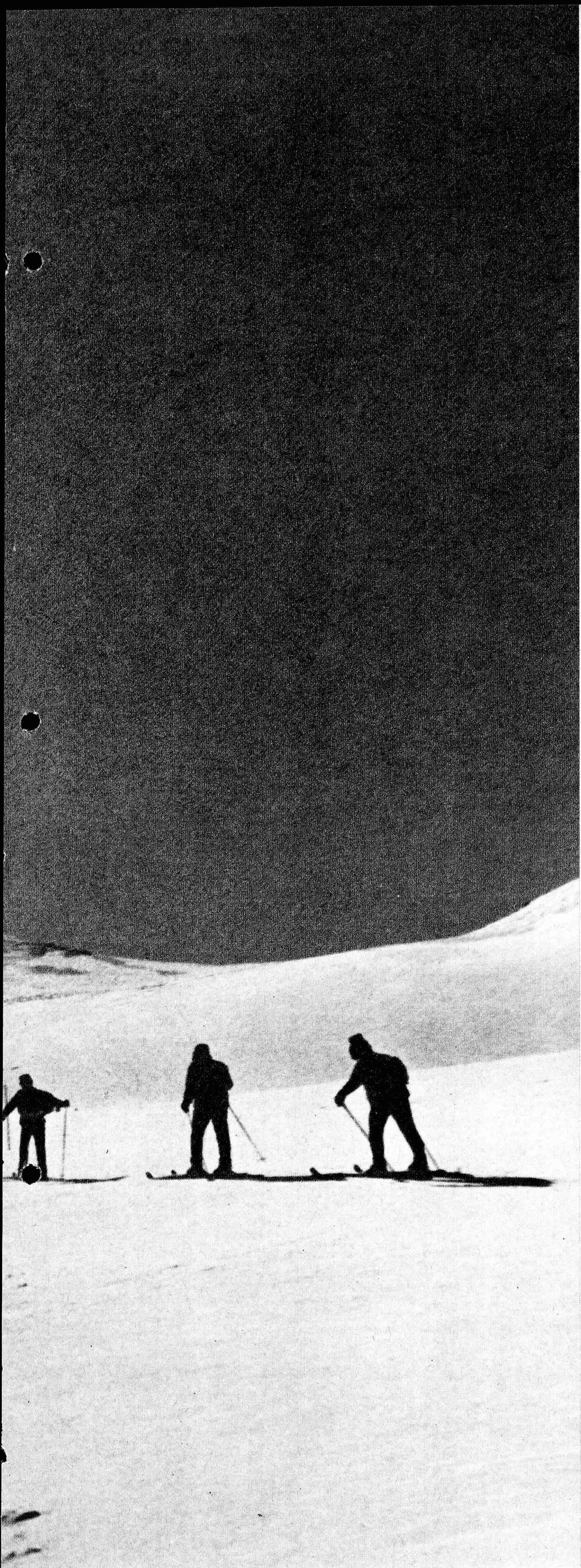
NORIKURA CORONA STATION

Text By SHINGO NAGASAWA
Professor, University of Tokyo,
Tokyo Astronomical Observatory

Photos by SADAO ICHIYANAGI



The Norikura Corona Station, operated by Tokyo University's Tokyo Astronomical Observatory, is located on Mt. Norikura in the Japan Alps, known as the "roof of Japan"—that is, at a point 137 degrees 33 minutes east longitude, 36 degrees 06 minutes north latitude and 2,876 meters above sea level. In terms of altitude, it is the second highest observatory of its kind in the world. Moreover, it is the one and only corona observatory situated midway between Europe and the United States. Therefore, it is indispensable for joint international observation, designed to explore the mystery of the sun. Since it was set up in 1948, observation has been conducted without a single day's rest, producing many marked achievements.



Left: Researchers head for the observatory (below) atop the mountain. Known for heavy snowfall, the mountain is completely covered with snow from October to June. Even in April when cherry trees bloom in Tokyo, the observatory is still surrounded by snow and ice. Skis are the absolute necessity for the staff. The staff is made up of three researchers and as many miscellaneous service personnel, charged with cooking and other jobs. They are alternated every 20 days.









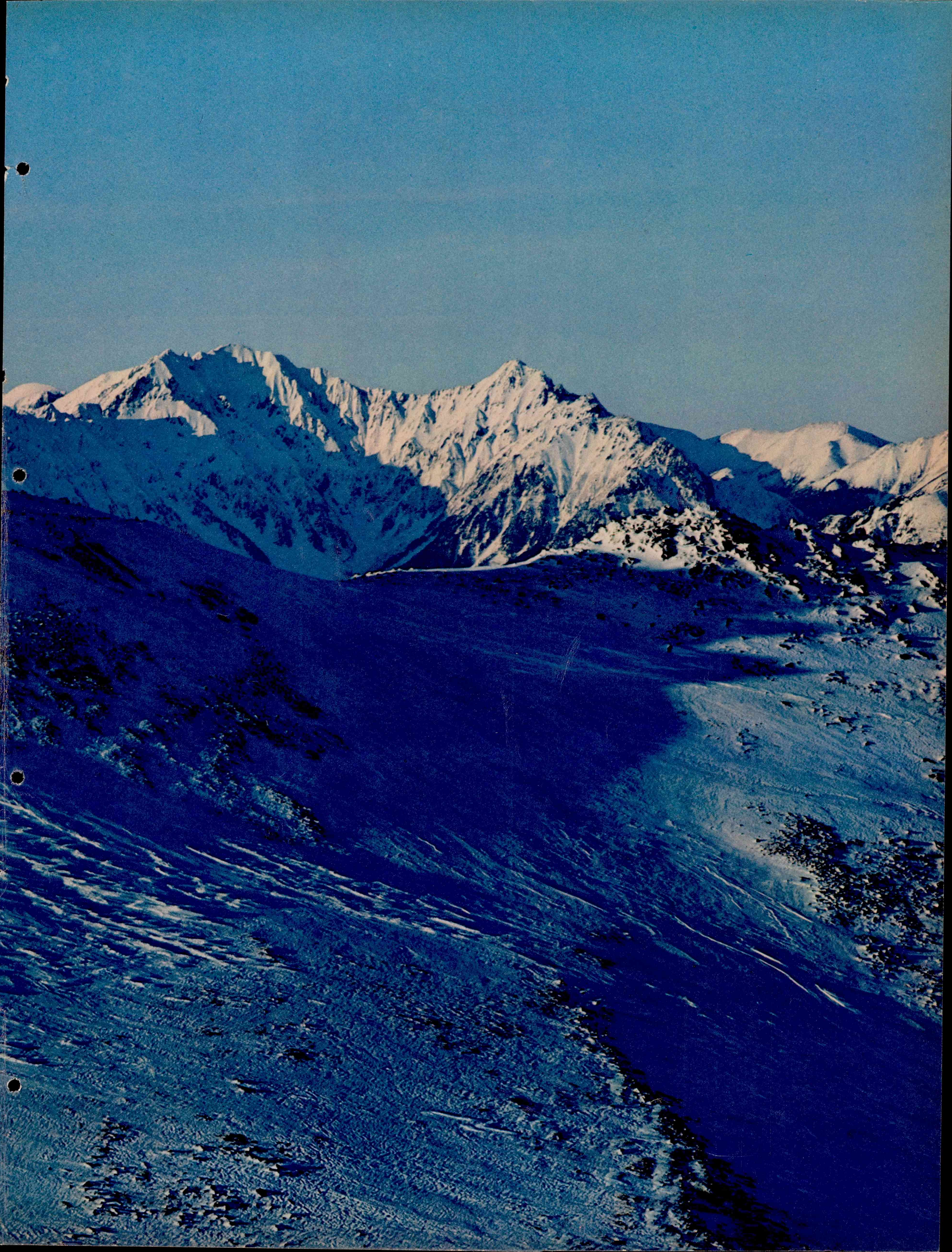
Top: Photos of corona are examined. The result of observation is reported to the Tokyo Astronomical Observatory every day by a telephone. Above: Observation of temperature. In winter, temperature plunges to 30 degrees below zero C. Right: Ice is struck off the dome. It's a daily work of the staff.



Solar corona is photographed with a camera attached to the coronagraph.

Next pages: Norikura Corona Station and the mountains of the Japan Alps in April.











Top: A birthday party for a member of the staff. Beer served at supper tastes especially good. The staff applauds a birthday cake, hauled up by a relief researcher. Above: A tunnel through snow forms the entrance to the observatory. Right: Water for drinking and other purposes is made by melting snow.

VERY few people have seen an actual total eclipse of the sun at first hand, but many probably remember seeing the celestial phenomenon in pictures or newsreels.

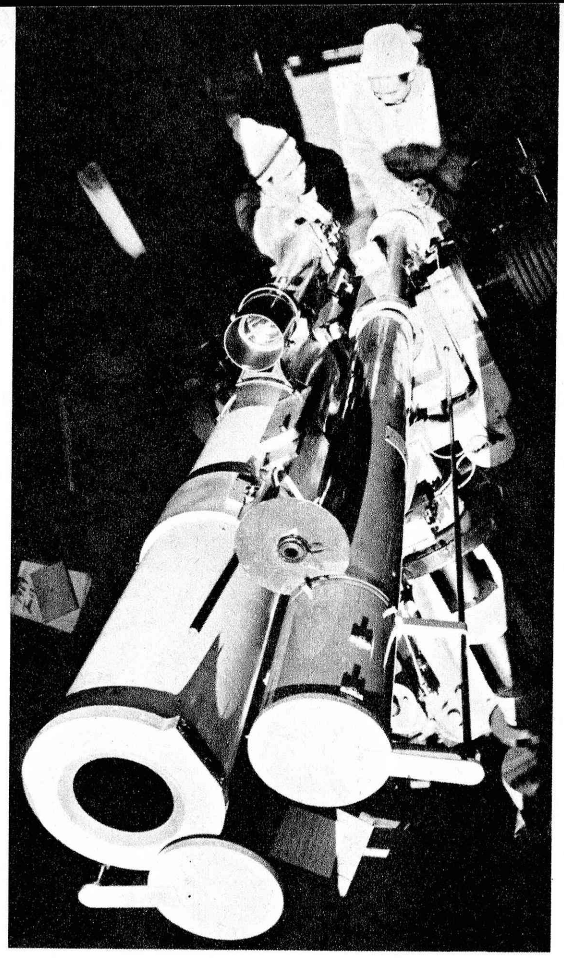
In a total eclipse, the black sun is seen surrounded by a pearly colored luminous envelope, the outer limit of which extends twice the sun's radius from the edge of the sun. This luminous envelope is known as the solar corona. The form of the corona varies with each eclipse, but is mostly circular or in the shape of wings etxending to the left and right of the sun.

What has been a great obstacle to the study of the corona, despite many attempts to overcome it, is the fact that the phenomenon becomes observable only during a total eclipse. The reason is that the brightness of the corona is, at the most, only about one-millionth of that of the sun proper, which is known as the "photosphere" among astronomers.

Another major difficulty has been the fact that the corona starts right outside the photosphere. In lowlands, to say nothing of urban districts, the air contains minute particles of soot and dust, which cause the strong rays of the photosphere to be scattered in all directions. As a result, the surrounding area i.e., the site of the corona, shines in white at such a brightness—one-thousandth that of the photosphere—that the corona can hardly be distinguished. This interference is eliminated in a total solar eclipse, as the rays from the photosphere are obstructed far above the atmosphere, permitting observation of the corona.

Well aware of these limitations, astronomers have set up telescopes on mountaintops of 3,000 to 4,000 meter elevation, in an attempt to make observations through a clean atmosphere. But these attempts all failed, as did many others made over a period of several decades—until, in 1930, a French genius named Bernard Lyot (1897–1952) finally made it possible to observe the corona without depending on a total eclipse.

As stated, the corona starts very near the photosphere. Consequently, in observing the corona through a telescope, the strong rays of the photosphere inevitably enter the telescope. What caused the past failures was the fact that scattered light caused by this strong rays in the telescope was not removed. Noting this, Lyot designed a special telescope, called coronagraph, and set it up at the observatory on top of Pic-du-Midi, a peak rising 2,870 meters above the sea level in the Pyrenees range along the French-Spanish border.



Coronagraph (left) and K-coronameter (right) of the Norikura Corona Station.

THIS revolutionary invention immediately caught the attention of astronomers throughout the world. At present, more than 10 corona stations, including the one at Norikura, are actively engaged in corona observations in different parts of the world. Nearly all are located at elevations of 2,000 meters or higher.

A coronagraph, however, does not enable a corona observation to be made under the same conditions as in a total solar eclipse. At Norikura, for example, even when the skies are extremely clear, the intensity of the scattered light around the photosphere is 15 to 20 millionths of the photospheric rays, or about ten thousand times as bright as the sky at the mid totality. Now, the world's corona stations have agreed that corona observations should be made by the following method: The mixed rays from the corona and the scattered light obtained through the coronagraph are analyzed by means of a spectrograph and the intensity of the emission lines peculiar to the corona is measured. When observation is confined to colors of an extremely narrow band where the emission line is found, the brightness of the corona, relative to that of the background scattered light, increases so much that the observation is rather easy, especially when and where the corona is active.

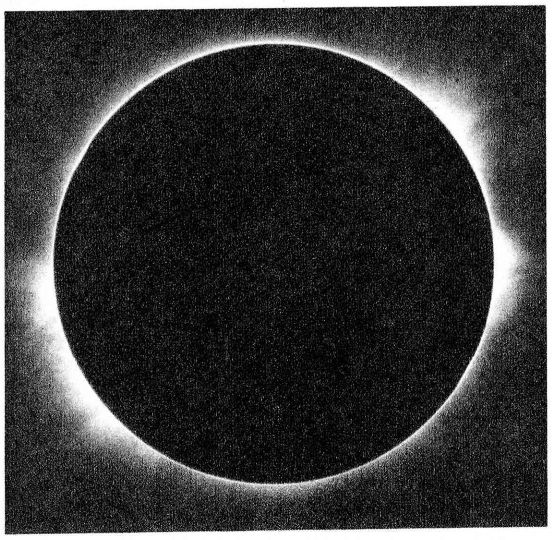
The corona is an extremely rare gas; its density is about 1/100,000,000 that of the photosphere, which in turn is about 1/100,000 of that of our atmosphere at sea level. Its temperature is in the order of 1,000,000°K against the photosphere's 6,000°K which is incredibly high. The coronal gas is made up, for the most part, of free electrons and protons produced by ionized hydrogen. What we see at a total eclipse is mainly the light of the photosphere reflected by these free electrons; the emission lines referred to above originate from ions of other familiar atoms, such as iron, nickel, calcium and so on.

Now, if the corona were uniform and did not change with time, then it would suffice to make observations at one point on the earth. Actually, however, it changes momentarily. Thus, observations at only one station are inadequate even if the area is completely free of rain and cloud, because observation cannot be made at night. Constant observation of the corona is possible only by setting up a series of stations located at suitable longitudinal intervals. That is why international cooperation is indispensable. As Japan is geographically located midway between Europe and America, with about 8 hours' time difference, the Norikura station bears an important responsibility.

Anyone can imagine that the study of the sun is of vital importance astronomically, but that is not all. The sun exerts tremendous influence on the earth. Take what is known as the solar flare, for example. When large flare occurs on the sun, emission of ultraviolet rays and X rays increases abnormally, and at the same time part of the corona in that region is blown away with such a force that it approaches the earth about a day later. The former phenomenon causes short-wave radio fade-out known as the Dellinger effect. The latter phenomenon causes the aurora and magnetic storms. In some cases, an unusual increase in the cosmic rays follows. One can see, then, that effects of the sun are of great interest not only to astronomers but to geophysicists as well. Today, these solar phenomena are linked directly to the well-being of the astronauts who make space flights. These and other problems have provided a major driving force for stepping up the international cooperative studies of the solar corona and various other phenomena related to the sun.

IN Japan, studies concerning corona observations were started during World War II by Dr. M. Notsuki at the Tokyo

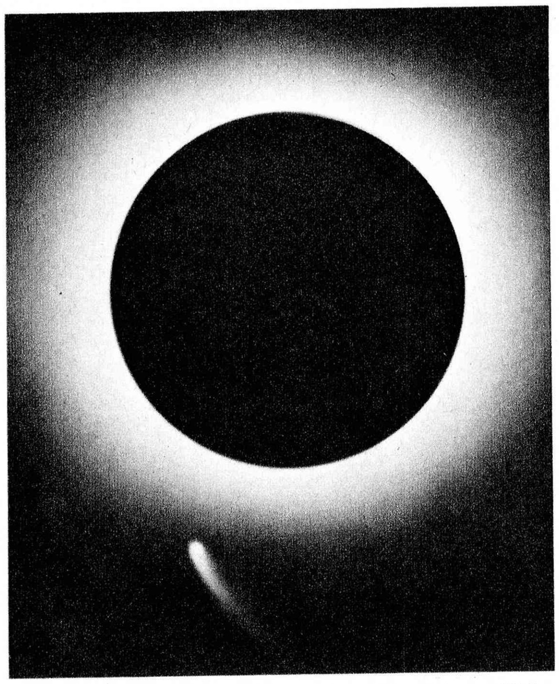
Astronomical Observatory, Tokyo University. But it was not until after the war, in 1946, that an experimental coronagraph was completed. The trial model later underwent improvement upon improvement while, in parallel, a search was launched for a suitable observation site. After investigating 15 possible sites in the mountains of central Japan, Norikura was picked in 1948. In the autumn of the following year, an observation station with a dome of 4 meters diameter was constructed and next to it living quarters of 50 square meters, at an elevation of 2,876 meters above the sea level. Immediately, round-the-year corona observation was commenced with the experimental coronagraph. Except in the four months of July to October, when the station can be reached by car, access was extremely difficult because of the deep snow which covers the area. The last leg of the trip from Tokyo had to be made on foot or skiis, trudging along the snow-bound path over a distance of 12 kilometers from the village at the foot of the mountain, 1,200 meters below the station.



Corona photographed in the light of the green emission line using a special filter attached to the coronagraph of the Norikura station. *(Photo by Norikura Corona Station)*

In the early years, communications with the Tokyo Astronomical Observatory at Mitaka, in the western suburbs of Tokyo, depended on a Morse telegraph system so that a 1 kilowatt engine generator was used exclusively for recharging the batteries for the radio set. Flashlights with dry cells were used for lighting, and a coal-burning stove was the only heating equipment for the cold and long winter months.

Then, in 1950, a modern coronagraph (12 cm aperture, 150 cm focal length objective lens) with a spectrograph manufactured by Nippon Kogaku Kogyo, a maker of optical instruments, were installed under the dome. This telescope, after minor improvements, is still today being used for joint international observations. Other new equipment introduced later includes, in 1955, a horizontal telescope and coelostat with a 30 cm mirror, and in 1961, a K-coronameter which is used to detect reflected light from the corona electrons.



Comet Ikeya-Seki just grazing the sun. This photo was taken on October 21, 1965 with the coronagraph of the Norikura station in the broad daylight. This is the world's first successful photographing of a comet in the daytime. *(Photo by Norikura Corona Station)*

The living quarters have been enlarged to 400 square meters, while two 50-KVA generators have been installed. One of them is a standby unit and the other is operated 24 hours a day for lighting and heating. A major boon came in 1966, when a regular telephone was installed and a snow car service made available.

The observation personnel, who are assigned here in shifts from the Tokyo headquarters, enjoy cool summers, but winters are harsh on them, with temperatures plunging 30 degrees below zero centigrade. The best season for observation is autumn, and the average number of observation days is 120 in a year.

At present, construction is under way for a new research coronagraph with a 25 cm aperture. Upon completion, in 1971, the new equipment is sure to contribute immensely to research in this field of science.

LIVING NATIONAL TREASURE JUZO KAGOSHIMA

A Master Doll Maker

BY MATSUSABURO HORITA
ART CRITIC

Photos by NOBUAKI FUKUI



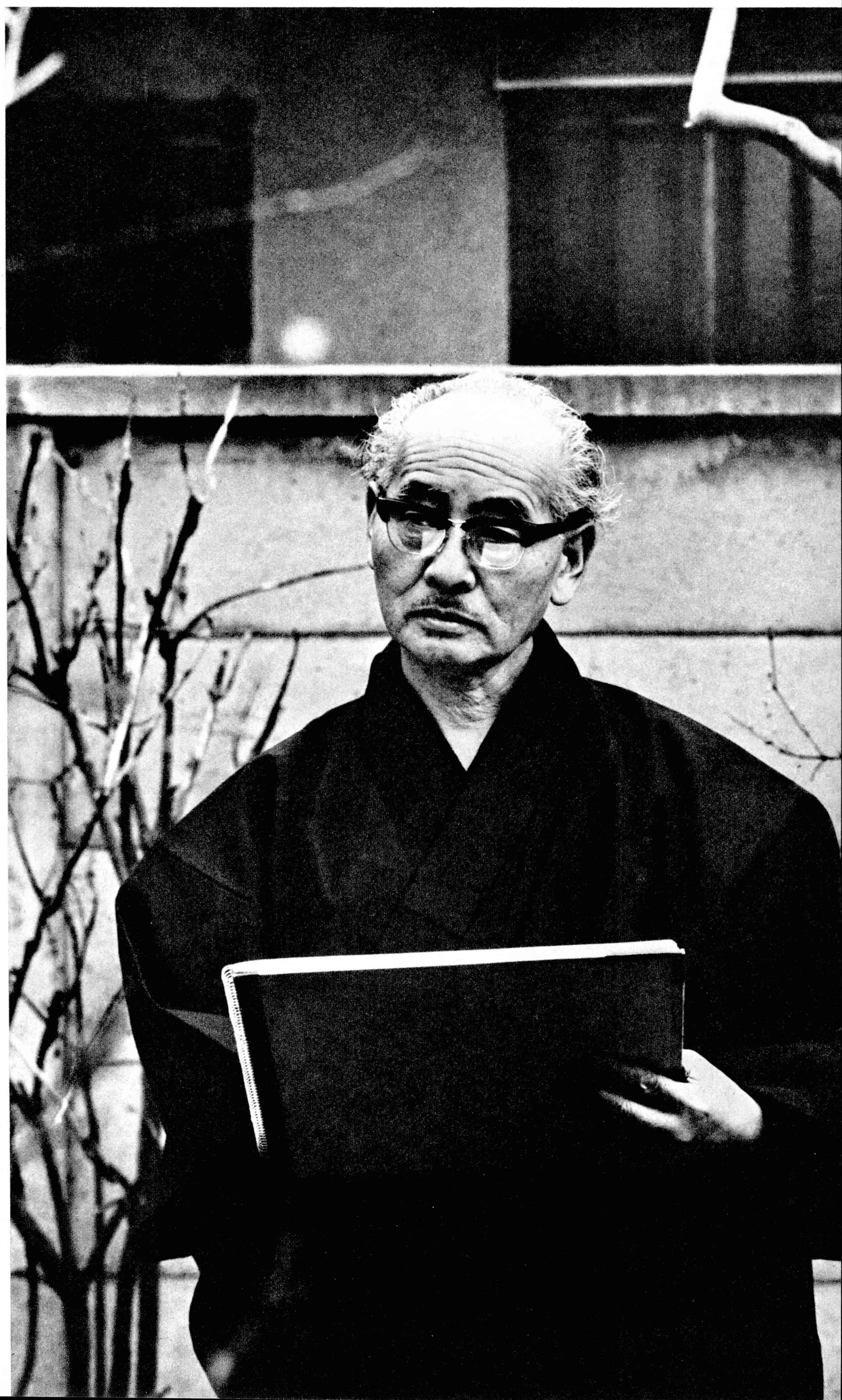


Mr. Kagoshima making an original clay mould of a doll at his quiet atelier in Nerima, Tokyo. His method requires an enormous amount of patience and perseverance.

The daily life of the master doll maker is very neat and clean, suggesting vividly that beautiful human sentiments originate in close familiarity with mother nature.



Pure Japanese paper are torn by the finger tips into small shreds and carefully pasted on the surface of a doll.



THE doll "Shika-no-shima Genso" (Fantasy of Shika Island), made by Mr. Juzo Kagoshima in 1967, is counted among his masterpieces (See p. 41). The theme of this work—an idea of his own creation—is a fantasy about a young widow whose husband has never returned from a fishing at sea and who, while yearning after him, turns mermaid and searches for her lost husband. Warm, indelible affection between man and wife is represented in a romance linking old songs of the Man-yo-shu (A Collection of Ten Thousand Leaves), Japan's oldest anthology compiled in the eighth century, and the custom of *sudate* (standing bamboo hurdle) in the fishing village of Shika Island.

Here, located at the mouth of Hakata Bay, Kyushu, *su*, a bamboo agricultural instrument, is placed against the door of a house when it is necessary to turn away visitors in the daytime. This is the so-called *sudate* and everybody is required by age-old custom to refrain from visiting a house with *su* at the door. For it signifies that an exchange of conjugal love is under way in the house. Mr. Kagoshima is well aware of this custom, since he was born not far from Shika Island, and that is why the mermaid doll carries a *su* as a symbol of conjugal affection. The impressively undulating lines of the mermaid's body not only represents a deformation designed to stand up a *su*, but also may be taken as a rhythmical expression of unrequited, deep affection, which agonizes her lithe body. The upper half of her body is covered with an ancient Japanese dress of noble, elegant colors. This, it is believed, shows that Mr. Kagoshima has taken a hint from the ancient songs of the Man-yo-shu. At the same time, it represents careful attention to the aesthetic effect of the fantasy. Moreover, the curved lines of the mermaid's fully grown body centering on the hips shine with dazzling sensual beauty.

The "Fantasy of Shika Island" was made with paulownia wood for matrix and a special plastic material called *shiso* for modeling. In plain language, *shiso*, invented by Mr. Kagoshima, is made by adding an agglutinative substance to a mixture of mainly bast fibers from such trees as *kozo* (paper mulberry) and *mitsumata* (edgeworthia chrysantha), both materials for traditional hand made Japanese paper, and then pounding and kneading the mixture into a special plastic material in a mortar. As for the surface finishing of a doll made of this material, pure *kozo* paper and other kinds, dyed with chemical, vegetable and animal dyes, pigments and lacquer, are torn by the finger tips into small shreds, which are then pasted on the surface one after another to form many layers. For the face portion, however, special snow white paper, called *hoshoshi*, is used in this scrupulous pasting process.

One of the characteristics of the *shiso* dolls is high solidity, and they are incomparably more resistant to shock than terra cotta. Moreover, the special texture of Japanese paper, which does not reflect any strong light, gives an aesthetic touch of unique, heart-warming softness. Furthermore, *shiso* dolls are far more durable than those made of other materials. It may be said, therefore, that Mr. Kagoshima's methods using *shiso* and Japanese paper are the best for making dolls compared with others. Nevertheless, there has not yet appeared a single person who can truly use the same method as Mr. Kagoshima's. For the manufacture of dolls by his method is an extremely difficult process requiring a great deal of time and patience. The mixing of ingredients to make the plastic material must be delicately changed according to the theme of a doll. Therefore, success comes only after painstaking scientific efforts and repeated experiments. And that is why the Government has designated him as a "possessor of important intangible cultural property" or "living national treasure" as the nominee is generally called.

MR. Kagoshima was born in Fukuoka in 1898. The biggest city in southwestern Japan, Fukuoka is also a pivotal center of culture. From as far back as about 6th century, there were brisk commercial and cultural interchanges between the area and China. It also ranks only after Kyoto and Nara in many valuable cultural relics. In the period of the Tokugawa Shogunate, it was the capital of a fief ruled by the Kuroda Clan noted for a spirit of rectitude. This atmosphere, coupled with his self-training, has built up his cleanly, straightforward character as an artist as well as his unbounded love of learning.

At present, he is known not only as a top-flight doll maker, but also as a poet of long standing. He is the leader of a *tanka* (traditional Japanese poem) study group, and has so far published 15 books of his poems. He even served on the screening panel for the annual Imperial poem competition for several years. Incidentally, his doll entitled "Take-no-Hibiki" (Sound of Bamboos) is displayed in the Chigusa-no-ma hall of the recently completed new Imperial Palace. Since he is well versed in the literature and history of ancient Japan, they have served as the source of themes for many of his dolls, and there have increasingly assumed the nature of fantasy.

"Goddess of Spring" (1969).



On the whole, moreover, they are incomparably noble and graceful, probably reflecting his academically cultivated character. Therefore, he has always played a leading role in all the fields he has so far been concerned with. For instance, he is second to none in the study of traditional Japanese paper. His knowledge in this sphere is astonishingly abundant and extensive. Therefore, he is an expert committee member of the Cultural Property Protection Council of the Cultural Affairs Agency.

Incidentally, his wife Yasuho is also known for her excellent *tanka* poems. And the Kagoshimas are deeply fond of flowers from season to season, while nests and feed boxes for birds are hung on the trees. So, there are always many birds playing and chirping among the trees of his garden. The daily life of the Kagoshimas is very neat and clean, suggesting vividly that beautiful human sentiments originate in close familiarity with mother nature, which is the source of every form of art.

Color page: "Fantasy of Shika Island" (1967).





Japan's Real "Swan Lake"

Photos and Text by Kiyoshi Honda



Swans coming to a small lake on the Japan Sea coast from Siberia every winter were designated as "natural monument" by the Government in 1954. The arrival of swans dates back to when a father-son team of a nearby farm house protected an injured swan. Five years after that, they succeeded in feeding natural swans. Nowadays, upward of 500 swans come to the lake. Mr. Shigeo Yoshikawa, 45, has taken over the feeding task from his father and gives food to the swans three times a day. K. Honda is a local government employe. Fascinated by Yoshikawa and his swans, he has been recording their friendly intercourse with a camera.





Left: Yoshikawa sprinkles breakfast on the lake amid early signs of spring.

A mischievous swan is carried back to the lake. It weighs more than 10 kilograms.

Wild Swans and Mr. Yoshikawa

THIS year, a truthful drama between human beings and swans is again unfolding on a small lake in a snowy region of Japan. It is far from easy to have wild swans feed on food supplied by human beings, but this rare, uphill task has been accomplished by the Yoshikawas, living by the lake, after surmounting indescribable hardships. And in this process, various moving episodes have occurred between the birds and the people surrounding them.

In recent years, the number of swans visiting the lake, called Hyoko, has surpassed 600. Most of them respond to the call of Mr. Yoshikawa, and when the feeding time comes, they beg for food. They can recognize Mr. Yoshikawa in the crowds which gather to see them. They spend six months on the lake, feeding on food collected from various parts of Japan.

Lake Hyoko is located in a paddy field in the suburbs of Suibara, an agricultural town in Niigata Prefecture with a population of 20,000 about 15 kilometers from the Japan Sea coast. The lake, only a little more than one kilometer in circumference, is a quadrilateral reservoir made about 300 years ago. It is just as large as the base of a pyramid. On the western shore is a row of houses, while dump trucks roar along a nearby highway. The environment is thus anything but ideal as a habitat of swans.

Wild swans are said to be especially wary and seldom appear near inhabited land. Then what has caused them to visit Lake Hyoko in the midst of human habitation every year?

Attempts to have wild swans feed on man-supplied food have already succeeded in various parts of the country, such as Hokkaido, Aomori, Yamagata and Fukushima. But the Yoshikawas, who feed the wild swans on Lake Hyoko, have played the role of trail blazers in this field.

It was in the winter of 1950 that a flock of swans—46 in number—came to Lake Hyoko for the first time. Juzaburo Yoshikawa and his son, engaged in farming by the lake, started to make strenuous efforts to have the graceful birds settle down on the lake. After five years of painstaking efforts, they finally succeeded in feeding the swans for the first time in the world. And this is the 20th year since the birds first arrived at the lake.

Feed for swans mainly consists of *shiina* (immature paddy). In addition, bread crumbs, waste vegetables and soybeans, barley tea grounds, etc. are dried and mixed with *shiina*. But what made Mr. Yoshikawa hit upon the idea of using such as tea grounds? He believed that he could not understand wild swans "unless he himself becomes a swan." So he even went so far as to taste the roots of aquatic plants and other foods of swans. The taste of these things, according to him, is a mixture of sweetness and bitterness. And this reminded him of dried tea grounds which are a favorite feed of chickens and other domestic animals—about the best food he could provide in a period of acute food shortage after the war.

Mr. Yoshikawa used to say: "Never tell a lie to the swans." Therefore, always wearing a hunting cap, a black jumper, riding breeches and boots, he went out at each feeding time with a basket slung from his shoulder. He sprinkled the feed while calling out loudly: "Ko-o-oy, ko-o-oy, koi, koi!" (Co-o-me, co-o-me, come, come!). To use scientific terminology, this was an application of the conditioned reflex. Fundamentally, however, his impressive achievement was made possible by sincere study and devoted affection.

After the death of Mr. Juzaburo Yoshikawa, his effort to respond to the trust of swans was taken over and further elaborated by his son Shigeo. As a result, the number of wild swans flying to Lake Hyoko has increased year after year. This year, more than 600 swans have come to the lake. The density of swans as against the area of the lake is probably the highest in Japan. At a "sanitarium for swans" operated by Mr. Yoshikawa, several of the birds have been cared for each year after falling to the ground due to illness in various parts of the country. After being discharged, many of them fly back to Lake Hyoko the next year to the delight of the Yoshikawas.

Two species of swans come to Lake Hyoko —that is, the whooping type and a somewhat smaller species. The swans with gray fledglings arrive at the lake coming all the way from Siberia and other northern areas by way of ponds and lakes in the Hokkaido and Tohoku (northeast) districts of Japan during a period of about six months from mid-October to mid-April the following year.



Fledglings of swans. Their size is about equal to that of parents, but their color is somewhat dark brownish and contrasts with snow.

The fully grown whooping swan has a wing span of more than two meters and weighs seven to 12 kilograms. The neck measures about 50 centimeters in length and the bill about 10 centimeters. The color is yellow from the eyes to the nostrils, and the rest of the bill is black. The webbed feet, about the size of an adult man's palm, are black.

The honking call of the whooping swan is high-pitched, sounding like "Kwawn, kwawn." But Mr. Yoshikawa can tell from the swans' voices if they are about to fly, in flight, on guard, angry, or affectionately calling a mate.

AT the height of the season from February to early March, several hundred swans cover the surface of the lake every day. Three times a day—that is, 8 a.m., 11 a.m. and 3 p.m., Mr. Yoshikawa calls them to their food. In response, large numbers of the birds converge on the feeding place with lively flapping sounds. This presents a really impressive spectacle of heart-to-heart contact between the man and birds.

Flocks of swans leave the lake for northern areas one after another from mid-March to early April. Then, it is said, they enter a breeding period on rivers, lakes and swamps in Siberia and northern districts of the Asian continent. Eggs of swans are presumably hatched around June and July. Therefore, fledglings fly across the Japan Sea with their parents only about four months after to visit Lake Hyoko. Their viability is really wonderful, and there is a record indicating swans enjoyed a longer life span than that of man.

Fascinated by the beautiful swans of Lake Hyoko, I have visited there for the past 10 years whenever I could spare time. In the meantime, I have made friends with Mr. Yoshikawa, who is also found of taking photos, closely watching the communication of love between the warm-hearted man and the charming birds. About six or seven years ago, I made up my mind to take a series of photos on the theme of a "record of swans and a man." But now, I am more fascinated by the personality of Mr. Yoshikawa than by the beauty of the swans, and keep on taking photos, feeling as if I were a part of Mr. Yoshikawa.

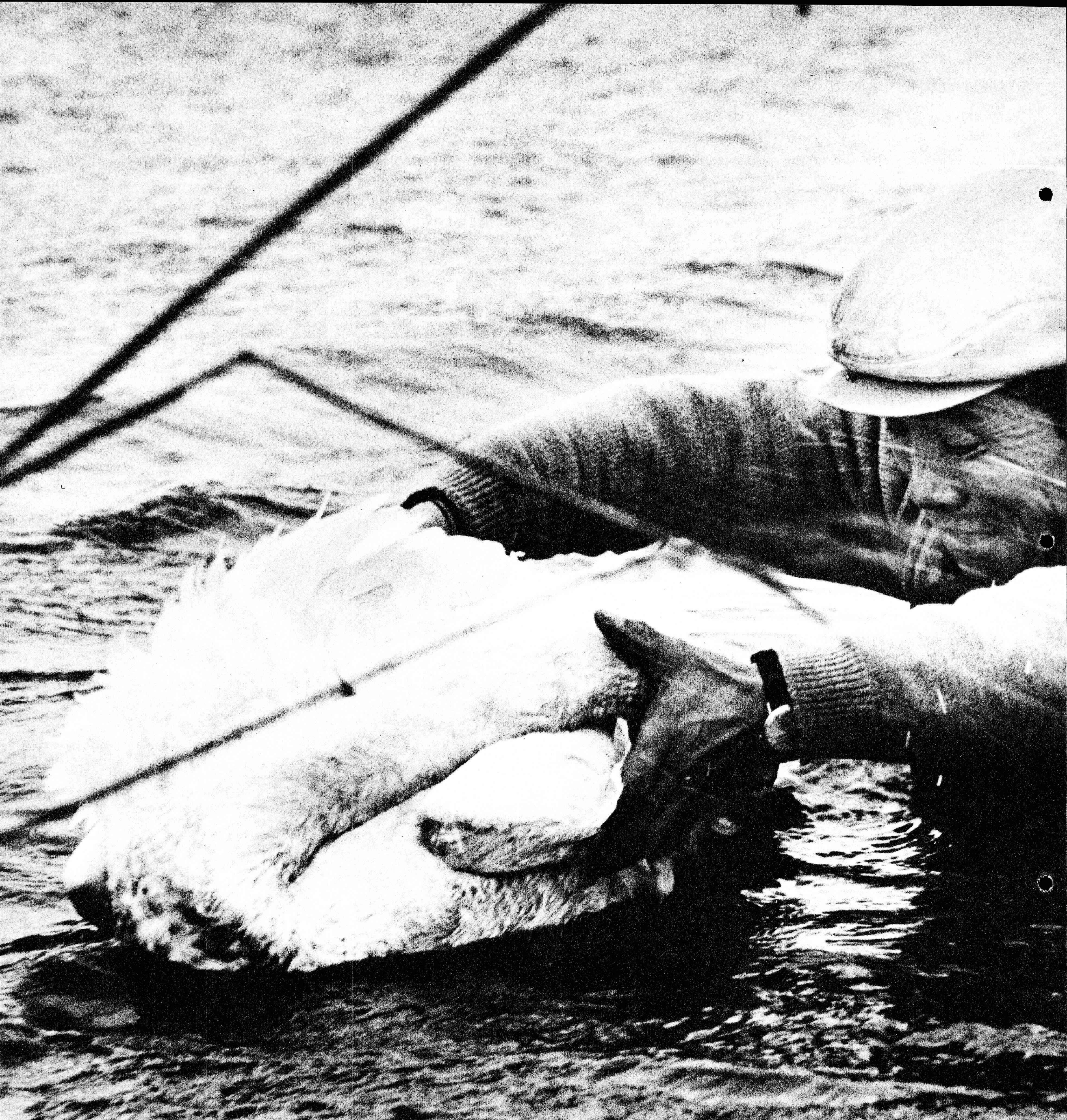
Whenever he goes to the lake, I promptly follow him. I have made no deliberate attempt to have him act the way I wished, as I have always wanted to fix his actual life as it is in my photos. Keenly feeling the difficulty of this, I have been pressing the shutter with a prayer in mind that I may be successful. Negatives of the photos I have thus taken already number more than 20,000. Yet I feel regret that I have not yet been able to register even a small portion of Mr. Yoshikawa's devoted efforts and the many episodes with his swans.





Above: Sick swans are given milk. Since the two have spent a summer at Yoshikawa's home, they are now completely tame.

Left: Yoshikawa walks around the lake after a feeding time. To see the swans in high spirits is the only and biggest reward for him.



An apparently sick swan is found on the lake. His affection for swans apparently does not make him feel the biting cold of lake water.





With Swans Every Day, Throughout the Day

A fledgling eats crumbs from Yoshikawa's hand. Such a scene of the wild migrant birds could not possibly be observed elsewhere.







A fallen swan, which has received kind treatment for a year, is now released to join fellow swans. School children give a hearty send-off.



A ring is placed on a foot of a fallen swan. On the left is Yoshikawa's eldest son, who will take over the swan tending job from his father.



Swans flock around Yoshikawa with his camera at the ready.



Applause. Swans are considered representative of graceful birds, but more often than not, they also display very humorous figures.

Right: The advent of spring spells departure time for swans. One flock after another circles over the lake and then heads northward.



CAPTAINS OF
JAL's Flight Crew Basic

EIGHTY would-be pilots of jumbo or supersonic jet planes are undergoing arduous training at Japan Air Lines' Flight Crew Basic Training Center which occupies a corner of Sendai Airport, about 300 kilometers northeast of Tokyo.

Every day a number of twin-engined training planes—painted red and white—take off one after another from Sendai Airport. Some of them fly out to the Pacific Ocean, and as they reach an altitude of 6,000 feet, one of the two engines is stopped for single-engine flight. In the next maneuver, the plane makes a steep turn, tilting so heavily to one side that the sea shows straight under the window. The instructor's eyes are glued to the instruments, to see if the proper altitude and speed are maintained. The slightest error cannot be tolerated. Beads of perspiration form on the brows of the tense trainee. Meanwhile, other planes head toward the mountains, while still others train in touch-and-go on the runway. The roaring of the engines constantly fills the air above the airport.

With the ever-increasing flights on the ever-extending international air routes, where Jumbo jets and supersonic transports are soon to make their appearance, training of competent flight personnel is becoming a pressing necessity.

A national flag carrier that operates international services including a round-the-wourld route, Japan Air Lines today owns a fleet of 45 planes including DC-8s and other large-size jetliners. But five years later, or by 1973, the number is to be increased to 77. Among them there will be three Concorde supersonic transports, which are now being developed jointly by Britain and France. This increase is said to be absolutely necessary in order to overcome the fierce international competition expected over the airlanes of the world.

To operate a large-size jet plane, it is said that a flight crew of 21 men—seven teams of three members each (a captain, a co-pilot and a flight engineer)—is required. To meet this requirement, JAL must secure, in the coming five years, 800 crew members in addition to those engaged at present. And most of the new staff will be supplied by the Sendai training center, which opened in April 1967 as Japan's first fully equipped center designed for training jet pilots for civil aviation.



The dashboard of the propeller-driven trainer is made to look like that of Boeing 727 jetliner.

Photos by MASAMICHI SUMIYOSHI

TOMORROW

• Training Center




日本航空
JA5140
40

The students at the center can be divided largely into three groups: graduates of Civil Aviation College; former members of the Air Self-Defense Force (ASDF); and JAL pilots who have completed basic training at the ASDF. All of them have at least 110 flight hours to their credit, some of those from the ASDF having 2,000 hours or more. The "basic training" at the center refers to basic training as pilots of large-size jet passenger liners.

The special feature of this center is that it can train a large number of excellent pilots in a short period of time and at a low cost. Training is given without using real jet planes, but the twin-engined propeller plane Beechcraft H-18, of which there are 12. The secret is that the instrument panel is nearly the same as that for the Boeing 727. All of the 30 instructors are active pilots serving on JAL's jetliners, four of them captains on international routes. These first-rate instructors teach the trainees in man-to-man sessions in accordance with a rational curriculum.

Classes are conducted both aloft and on the ground. Flight training covers all skills required of a jetliner pilot, ranging from such basic maneuvers as recovery from stalling, single engine flight and canyon approach, to such advanced techniques as route training (flight of a specified route at a specified time), and use of the automatic direction finder (ADF) and instrument landing system (ILS). A slight mistake in altitude or procedure may not pose a hazard in flying a propeller plane, but with a jet plane, the same mistake can result in disaster. That is why minor errors cannot be overlooked. In an apparently perfect landing operation, for example, the instructor may order the trainee to try again—because the timing was improper. The error may permit a small propeller plane to land smoothly, he explains, but not a large jet plane.

On the ground, 13 instructors give classes in navigation, aerodynamics, maintenance, English, physical education, and other subjects that help to develop the personality of the future captains as well as to equip them with sufficient knowledge and skill to discharge their duties. Ground training facilities include a Link trainer.

The training period ranges from nine months to one and a half years, depending on past experience. By the time a student completes the course here, he will have logged at least 400 hours in flight time. Upon graduation, the students receive further training with simulators of the DC-8 and other jets at Tokyo International Airport, before they are assigned to real jetliners. All graduates from the Sendai training center are said to have qualified for a pilot license after a minimum of the required training hours (less than 30 hours).

To fly a large-size jet for training, it costs several million yen per day. For a jumbo jet or supersonic transport, the cost soars to enormous sums. For this reason, all air carriers of the world try their best to hold down the training hours in actual jetliners.

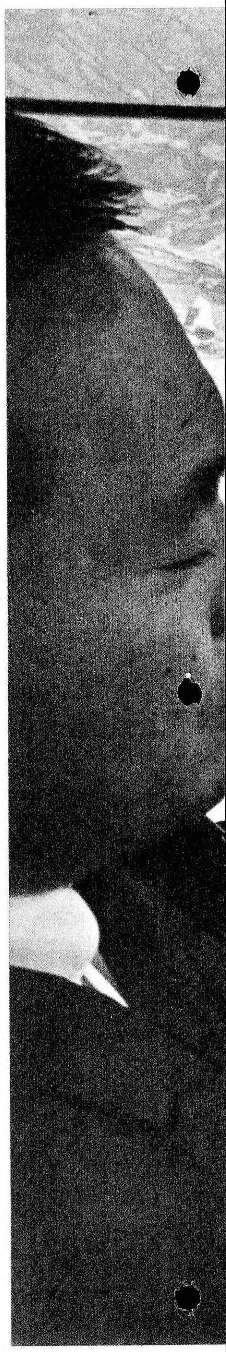
In this respect, JAL's Flight Crew Basic Training Center sets an example to the world with its efficient "pre-jet" training through which it reduces training aboard jetliners to a minimum.

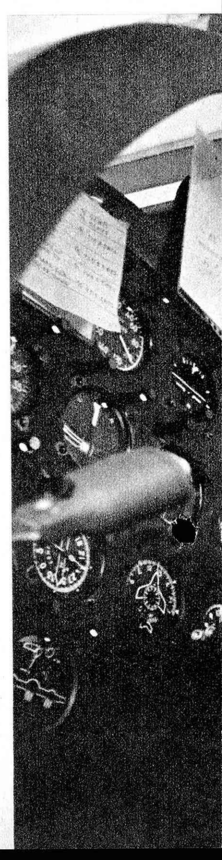


Color page: Beechcraft H-18 trainer in route training—that is, flight along the fixed course within fixed time. Right: Before boarding trainers, instructors and trainees listen to instructions by Director Tomoki Tsukagoshi of the training center. A pioneer pilot in Japan's civil aviation, Tsukagoshi served as captain of jetliner on JAL's international routes.



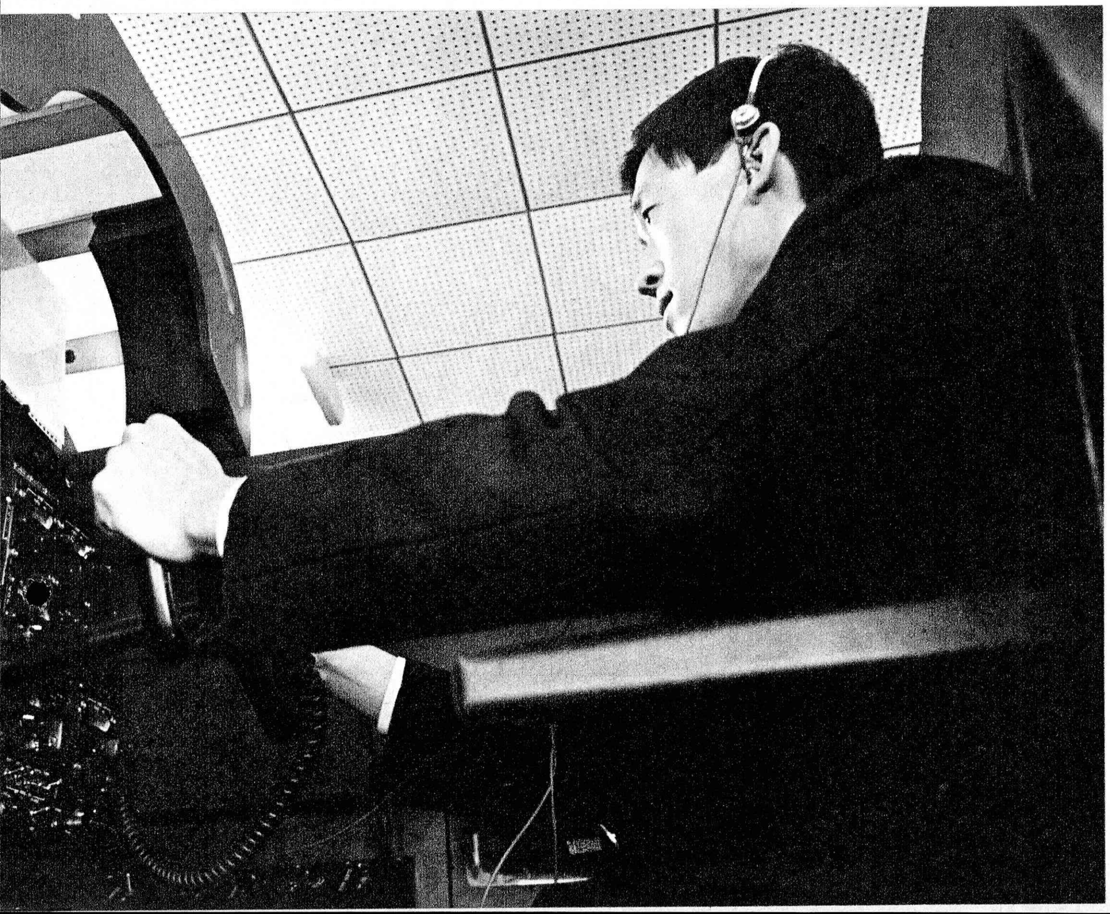
Flight training is given by a thorough man-to-man system. Since the flight of giant jetliner is simulated, even a slight error in speed or altitude, which does not affect the flight of propeller-driven plane, is not permitted.

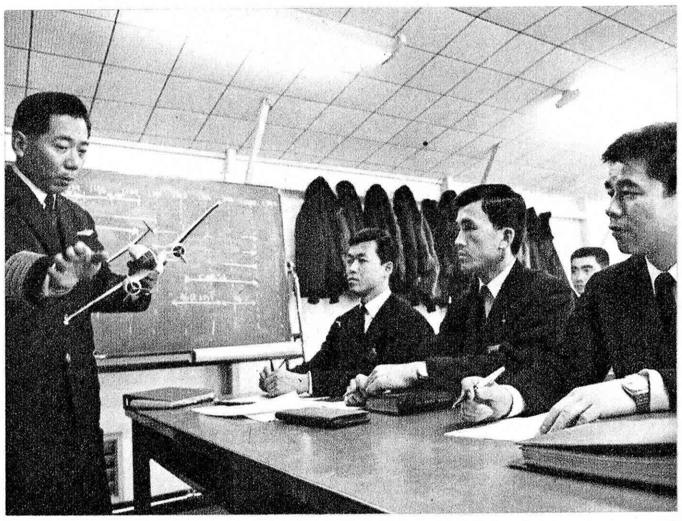




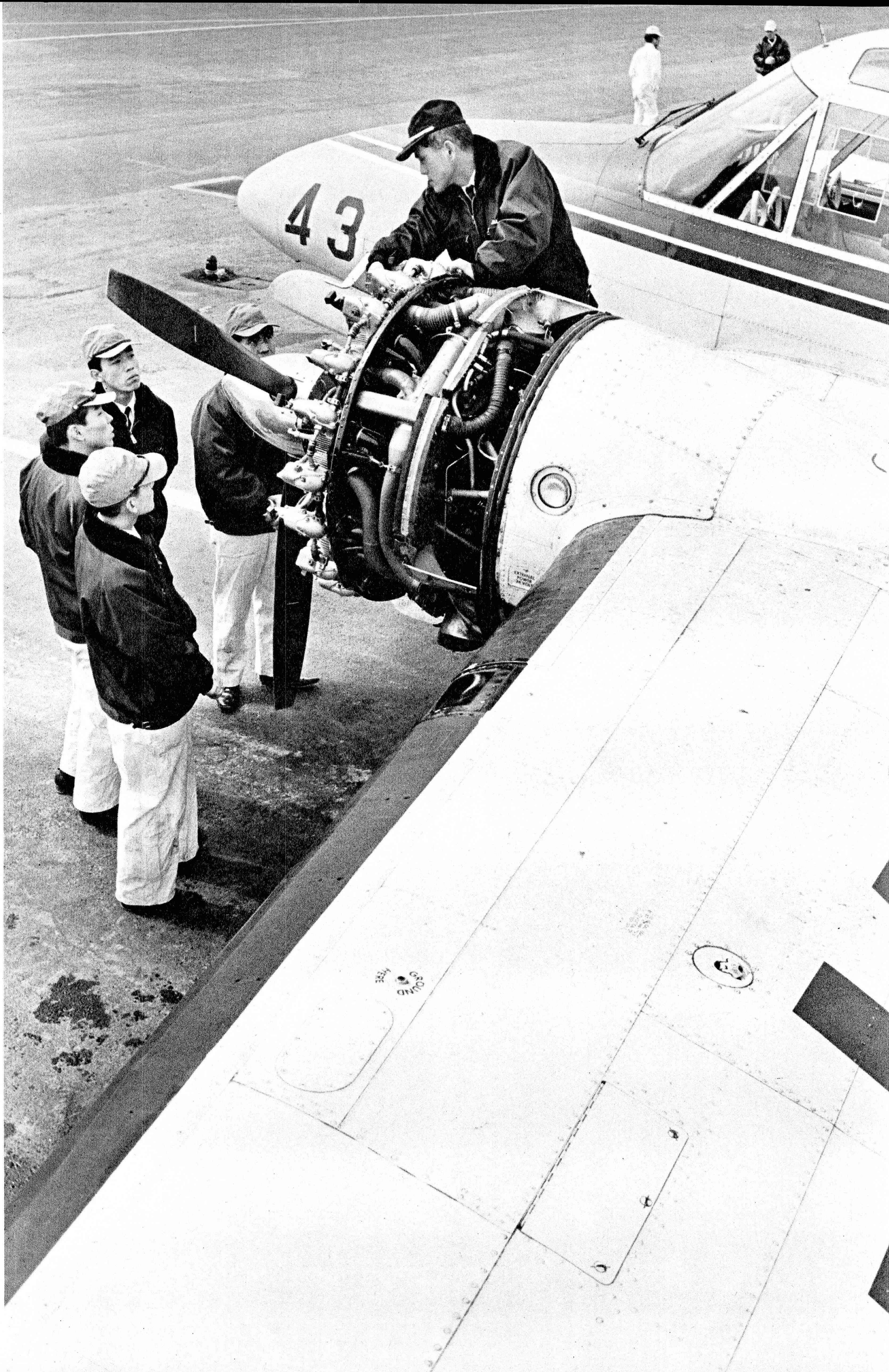
To Train Excellent Pilots in a Short Period







Top: Training in single engine flight. The left propeller is stopped. Left: Training by Link trainer. Above: Various subjects, including meteorology, navigation and aeronautical engineering, are taught in the classroom.


43
GROUND HERE

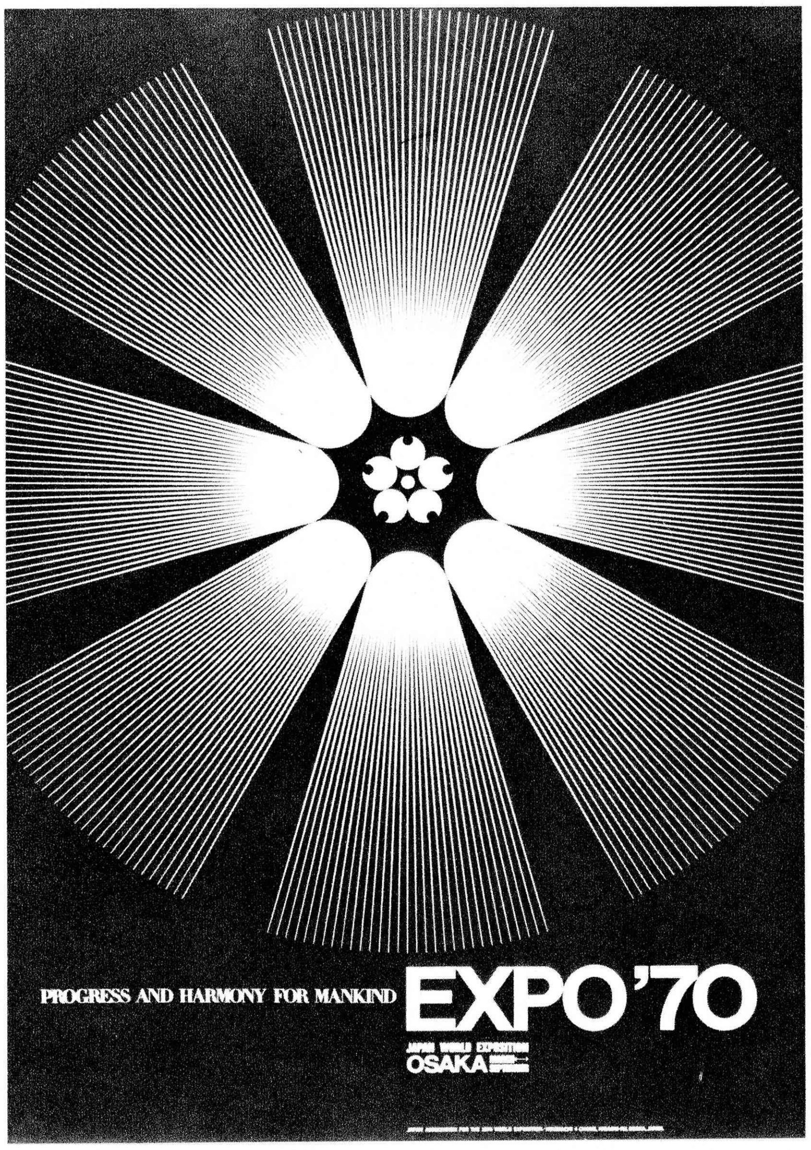
Left: Maintenance work is one of important lessons. Below: A de luxe air-conditioned dormitory capable of accommodating 100 trainees is located near the training institute. Japan's traditional tea ceremony, conducted in a Japanese-style room of the dormitory, is very popular among the trainees. Bottom: After a day's intensive training, trainees enjoy the games of "go" (Japanese checkers) and "shogi" (Japanese chess) in the lobby of their dormitory.

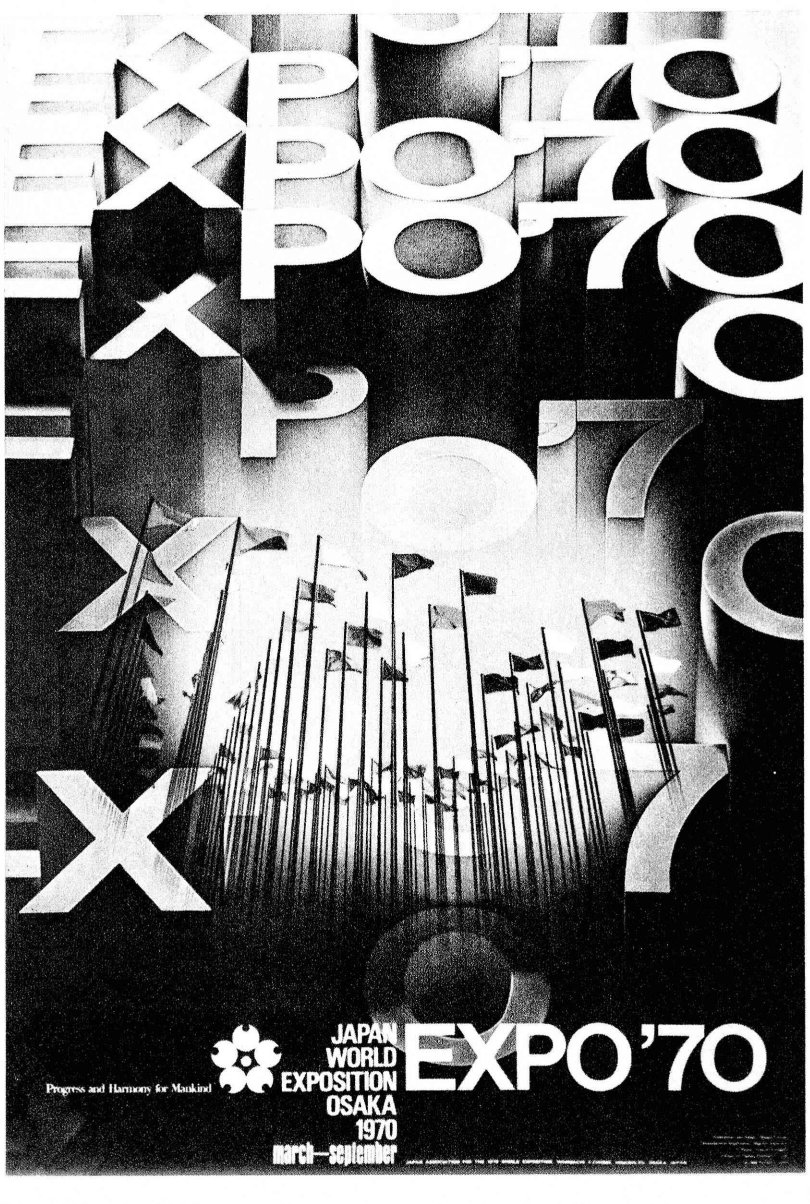


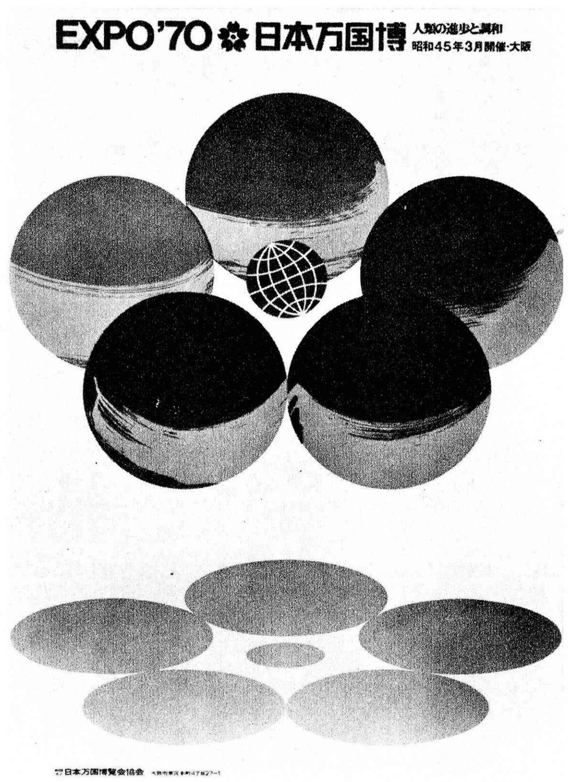




EXPO '70 Well Postered







The Japan World Exposition, Osaka, 1970 (EXPO '70) to be held at Senri Hills, Osaka, for 183 days from March 15 next year is now less than a year away. At the site of this biggest EXPO in history, dedicated to the theme of "Progress and Harmony for Mankind," construction of Japanese and foreign pavilions, and various other facilities are making rapid headway at the moment to make the dreams of the 1970's come true. The day is thus not distant when the cream of technological innovation in the world and the traditional art and culture of many nations are unfolded before the eyes of visitors from all parts of the world.

And it is posters that provide both the Japanese and foreigners with the first clue to what this grand fair in Japan will be like. The Japan Association for the 1970 World Exposition has put up numerous posters both at home and abroad in an effort to make known EXPO '70 to as many people as possible and arouse keen interest among them.

It is no easy task to express all of the three elements—the emotion of the world festival, the host country Japan and the theme of "Progress and Harmony for Mankind"—with impressive eloquence in a single graphic design. Posters introduced here are the works of Japan's topnotch designers. They are now seen on the walls of main streets, hotels and overseas offices of various Japanese organizations throughout the world. Depicted are the delight of children, the five continents, the unbounded sunshine, and the EXPO '70 symbol mark patterned after the five-petaled cherry blossom.

Admission tickets have now gone on sale in various nations of the world. Meanwhile, EXPO '70 medals have been sold and commemorative stamps issued. The world festival of an unprecedented magnitude is now only 300 days away.



On March 15, 1970, a new world comes to life in the heart of old Japan . . . EXPO'70!

The first World Exposition ever held in the Orient opens in 1970 for 6 months in Osaka . . . the center of Japan's lovely Kansai district, home of her culture for over a thousand years.

Picture yourself standing at the center of EXPO'70. You've been through the 815-acre grounds on an air-conditioned moving road of the future. Had a glimpse of life in the next century. Seen the faces and arts of more than seventy great nations.

You're just 20 minutes from sparkling downtown Osaka, Japan's second largest city. But in half an hour in another direction you can be roaming a graceful temple that's sheltered the spirit of Japan for 1300 years. Exploring a castle of the ancient *shoguns* whose floors have singing boards. Or starting off on a cruise through the watercolor beauties of the Inland Sea.

You can take the weekend off and go to a Japanese inn high on a hilltop and fall in love again with simplicity. Stretch out in a hot spring where fierce *samurai* came hundreds of years ago to soothe their battle scars. Then relax in a light cotton *yukata* while dinner is prepared and served in your room with a personal care you'll find nowhere else in the world.

Then back to EXPO! Perhaps to watch the opera. The ballet. Listen to a symphony. Take in a play. Or watch four of the great festivals of Japan presented in one place. Something no one has ever seen before, or ever will again.

There will be only one EXPO'70 in our lifetime. Can you afford to miss it—and Japan?

EXPO'70
the year of Japan

"Progress and harmony for mankind"



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1969·VOL.7·NO.3





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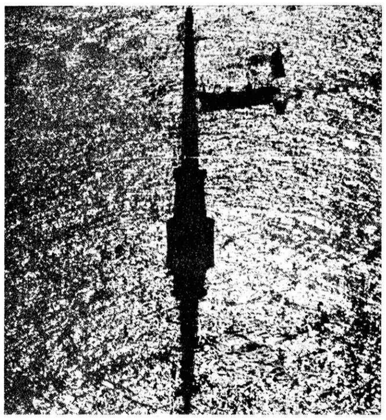
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CONTENTS



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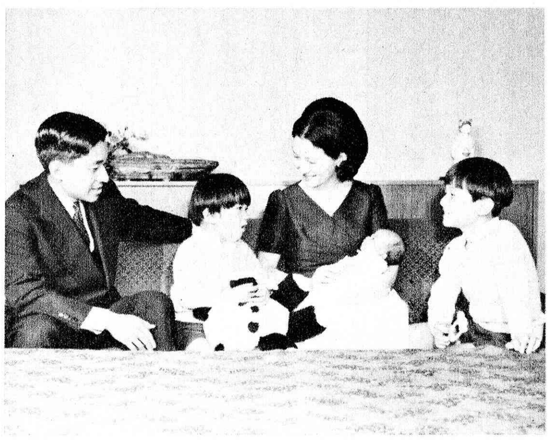
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Japanese Currents

IMPERIAL FAMILY

First Daughter Born to Crown Prince and Princess



Crown Princess Michiko gave birth to her third child—and her first daughter—this spring. And on June 6 or 50 days after the birth, the baby princess was taken to the Three Shrines in the Imperial Palace for the first time by ancient Imperial custom and then formally met her grandparents, the Emperor and Empress.

Named Princess Nori, she has two brothers, Prince Hiro and Prince Aya, who, it is reported, remain beside their new-born sister most of the time, both filled with joy whenever the baby smiles and cries.

Princess Nori is the ninth grandchild of the Emperor.

Photo shows Crown Prince Akihito and his family gathered in a happy mood around the new 50-day-old Princess. Left to right: Crown Prince, Prince Aya, Crown Princess with Princess Nori in her lap, and Prince Hiro.

TRAFFIC

Expanding Subway Networks

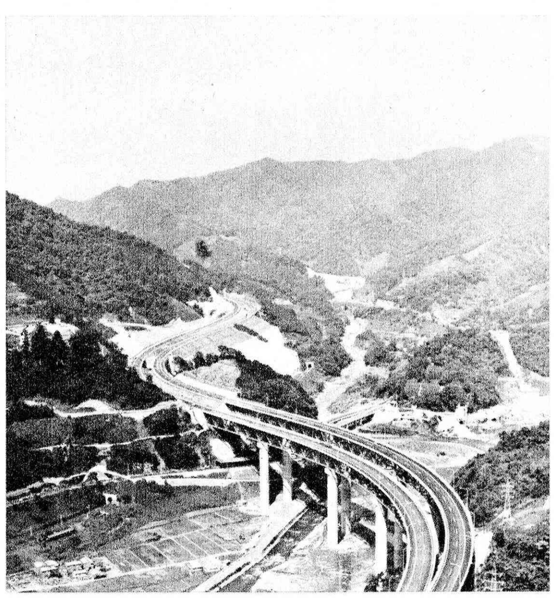
It was back in 1927 that a subway made its debut in Japan, covering a distance of 2.2 kilometers in Tokyo. But as increasingly heavy motor traffic has slowed streetcars to a snail's pace in recent years, subway networks are expanding with marked rapidity as a principal public conveyance system in the big cities. At present, four big cities—Tokyo, Osaka, Nagoya and Kobe—have subways, while Yokohama is now building one.

Tokyo's subway networks have a total length of about 120 kilometers, ranking among the Top Five of the world's urban subways. Subway passengers in the Metropolis aggregate 2.8 million a day. In recent years, the subway networks in Tokyo have been expanded by 8 to 10 kilometers a year, and Tokyo is likely to become one of the most advanced cities in the world as regards subway facilities in the near future.

In Osaka, western Japan, the total length of subways is to be increased from the present 40 kilometers to about 70 to handle visitors to the Japan World Exposition, Osaka, 1970 (EXPO '70). By 1975, it will be extended to 100 kilometers. In Yokohama, meanwhile, the first subway line will be opened in the spring of 1971. And Kobe is now rushing a switchover from streetcars to subways.

The day is apparently drawing near with fast tempo when all mass public transport systems in big cities are switched to underground routes.

Tomei Expressway Completed



The Tomei Expressway, a modern motorway between Tokyo and Nagoya, has recently been completed. The 346.7-kilometer expressway has a width of 25.4 meters (32.6 meters in part). To overcome complicated terrain along the route, including mountains and valleys, it has 12 tunnels, 266 river bridges and 135 viaducts. The longest tunnel is the 2,025-meter Nihonsaka Tunnel, while the Sakawa River Bridge has the tallest piers—that is, 65 meters high.

One of the expressway's characteristics is a gentle curve maintained throughout its length. Straight sections account for a mere 5 per cent. This is designed to prevent the driver's attention being distracted because of a monotonous straight line, sometimes resulting in his dozing off. On the other hand, some of the more than 400 bridges and viaducts along the new expressway are so designed as to let the driver pass without knowing he is crossing them. The purpose is to minimize mental tension due to a consciousness of bridge. The total construction cost is put at 342,500 million yen or about 1,000 million yen per kilometer.

The Tomei Expressway connects at Nagoya with the previously completed Meishin Expressway (Nagoya-Kobe). As a result, an expressway stretching for 536.4 kilometers has now linked Tokyo and Kobe. The non-stop travel time of truck from Tokyo to Osaka has now been cut to only seven hours. Thus the new expressway will serve as one of three transport arteries between Japan's two big economic spheres—namely, the Keihin (Tokyo-Yokohama) region and the Hanshin (Osaka-Kobe) area, the two others being the New Tokaido Trunk Line of the national railways and giant jetliner service. Photo shows the Sakawa River Bridge on the Tomei Expressway, boasting the tallest piers in the Orient.

EXPO '70

3rd EXPO Poster for Display Abroad

The third poster for overseas display to publicize the Japan World Exposition, Osaka, 1970 (EXPO '70) opening next spring was announced recently. Unlike the simple designs of the previous two posters, the new one features a combination of famous folk dances in various areas under the title "Japanese Festivals." This is symbolic of the EXPO '70 Festival Plaza, which will serve as a place for friendly interchanges among people of the world.

This is the last in a series of three EXPO



'70 posters for display overseas. The Japan Association for the 1970 World Exposition will print about 80,000 copies for distribution throughout the world and this poster will be used both before and during EXPO '70.

The art director and designer is Mr. Yusaku Kamekura. His previous EXPO posters have caught on well, winning a prize at the International Poster Exhibition in Milan. His latest work is also expected to prove highly popular for its typically Japanese atmosphere.

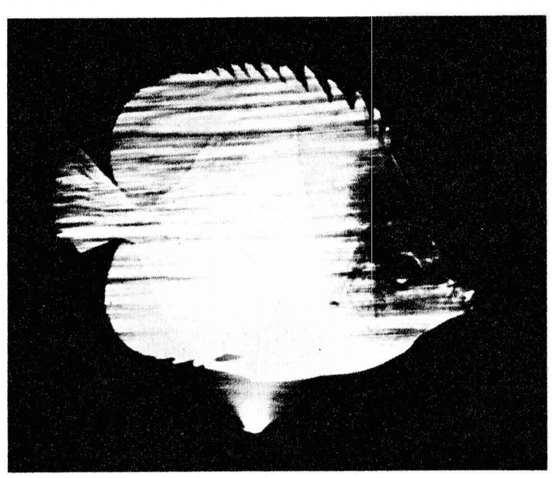
"Smoke Screen" for EXPO '70

Variegated display ideas are now being prepared and elaborated for private pavilions to be set up at the Japan World Exposition, Osaka, 1970 (EXPO '70). One of them announced recently—a "smoke screen" plan for the Mitsubishi Group Pavilion—has stirred public interest as an idea that can be of practical value even outside of EXPO '70.

Under this idea, the long-cherished dream of creating natural-color images of, say, fish, flowers or scenery in the air without any screen will finally come true. At the pavilion, it is said, as visitors proceed on a moving pavement, a giant fish with its mouth open will suddenly appear in front of and try to swallow them. But even if the visitors try to grab the fish, they will feel nothing and soon have passed right through its image.

As may be imagined from the name "smoke screen," images will be projected onto a thick "air curtain"—to wit, a smoke screen with air on both sides. In developing this system, the most difficult point was how to set up a transparent smoke screen as large as 26 by 4 meters, which maintains a uniform consistency without flowing.

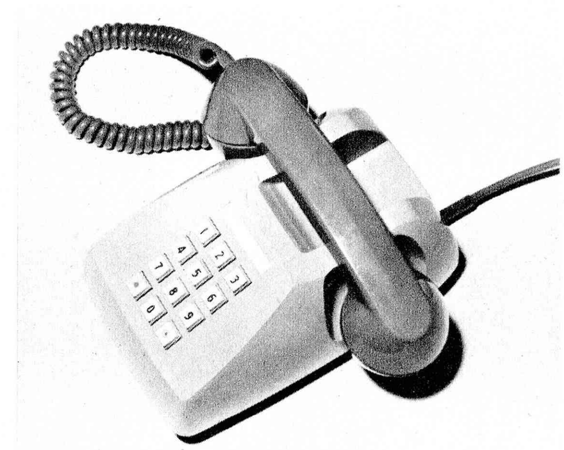
This technique will probably be applicable in many practical ways. For instance, in the field of stage setting, it will be possible to create a background of great spectacle and to switch to a different scene in an instant. Besides, the new technique will play a marvelous role in the interior decoration of department stores, tea shops and other establishments. Photo shows tropical fish projected on the "smoke screen."



COMMUNICATION

Push-Button Telephone Memorizes Numbers

The Nippon Telegraph and Telephone Public Corporation recently put on the market a new push-button dial telephone to meet a nascent age of speedy informaiton. The user of the telephone can have a memory device at the telephone exchange remember the numbers of other parties he calls up frequently. After that, he has only to press three buttons whenever he wants to call any one of them. This will cut the call time to only one-third for both local and toll calls compared with the



ordinary dial telephone.

The new telephone (photo) can memorize up to 20 telephone numbers. If necessary, the user may cancel a memorized number and have a new one remembered instead by simply pushing buttons.

As for numbers other than those memorized, the caller has only to press buttons in the order of component figures. The call time can also be cut in this case, since he does not have to wait for the dial to return to position.

The new telephone service will be limited to one area each in Tokyo, Osaka and Nagoya for the time being. But the public corporation intends to spread the service to all parts of the country in two to three years. In the future, the user of the new telephone will be provided with a simple calculating and other forms of computerized information services.

Europe Brought Nearer Japan

Japan's Overseas Radio and Cable System (KDD) is rushing expansion work on international communication networks between Japan and other nations to cope with a steep rise in international traffic. As part of this drive, KDD has recently completed a new 890-kilometer submarine cable between Naoetsu, Japan, and Nakhodka, the Soviet Union, and a ground station for satellite communication. As a result, communications between Japan and Europe have been markedly improved.

In the past, communications between Japan and Europe were handled by three routes—that is, a submarine cable between Nagasaki, Japan, and Vladivostok, the Soviet Union,

wireless communication through short waves, and the transpacific submarine cable for indirect communication via the United States and Canada. But these alone were not enough to take care of expanded communication traffic with Europe—to wit, 52,000 telephone calls, 920,000 telegrams and 520,000 telex messages a year. Therefore, Japan's industrial circles have long been asking for improvement of communications.

The recently completed submarine telephone cable across the Japan Sea and the new ground station for INTELSAT satellites are complementary to each other as sea and air communication routes. As a result, communications with West European nations, such as Austria, Denmark, France, Finland, West Germany, Italy, Norway, Spain, Sweden and Switzerland, let alone the Soviet Union, have been speeded up to the same level as domestic communications. Moreover, communications with African nations, conducted by way of Europe, have also been largely improved.

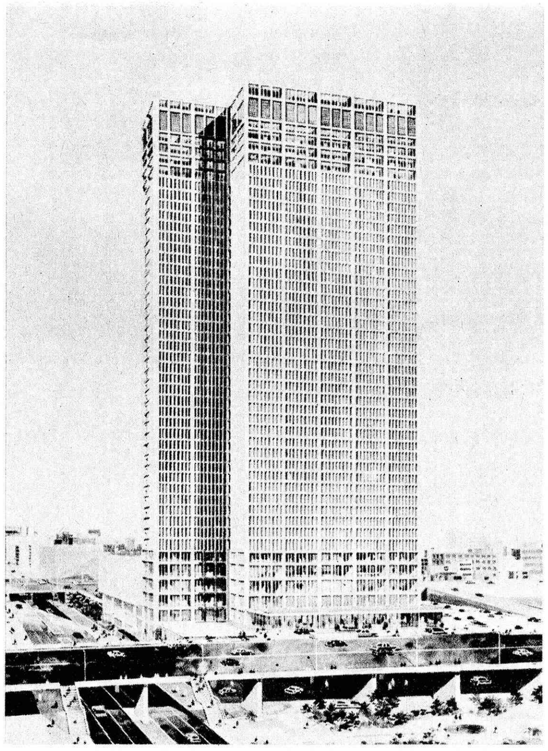
TOURISM

47-Story Hotel to Go Up in Tokyo

In Tokyo, high-rise buildings with 30 or 40 floors have sprung up in succession since restrictions on the height of buildings were largely relaxed. The latest addition to this building boom is a 47-story hotel to be constructed in Shinjuku known as a "sub-heart" or "new heart" of the Metropolis.

This "Keio Plaza Hotel" with a total floor space of 116,000 square meters will stand about 170 meters high and have 1,108 rooms capable of accommodating 2,000 guests. Upon completion on March 31, 1971, it will be the tallest building in Japan, eclipsing the 149-meter 36-story Kasumigaseki Building, and the 152-meter 38-story Trade Center Building (scheduled for completion later this year).

The hotel will make the most of its super height, with an observation room on the top 47th floor, a "sky lounge" on the 45th floor and a "sky restaurant" on the 44th. Up to the seventh floor, it will have a large variety of facilities, and be like a small independent community, ranging from a pool and a 1,500-seat international conference hall to post office, beauty parlor and a shopping arcade. Room



charges will be 3,600 yen (single) to 100,000 yen.

At the moment, there is said to be a shortage of more than 6,000 hotel rooms in Tokyo. Next spring, 490-seat "jumbo jets" will start flying into Japan, while the number of international air flights will continue to increase. And this will make hotel room shortage all the more acute. The Keio Plaza Hotel will be built by a subsidiary of the Keio-Teito Electric Railway Co., a major private railway firm based in Shinjuku. In addition, new hotels are also being built by the Imperial Hotel and the Tokyu Hotel Chain, while some private railway and aviation companies also appear inclined to go into the hotel business.

WOMEN

Mini-Skirted Japanese Cameraman Sets Round-the-Globe Speed Record

Miss Sanae Numata, 20, a Japanese woman photographer, set a new world record for speed trip around the world using regularly scheduled commercial flights. Time including ground stops en route was 52 hours 4 minutes.

Miss Numata took off from Tokyo International Airport at 21:30 (JST), on May 27 travelled eastbound by Japan Air Lines, stopping at San Francisco, New York, London, Paris, Rome, Beirut, Teheran, New Delhi, Bangkok and Hongkong and returned to Haneda at 21:34 (JST), on May 29.

At each ground stop en route, Miss Numata presented to the local EXPO '70 information center a specially designed countdown clock made available by Citizen Watch Co. The clocks will indicate the remaining days until the opening of the International Exposition in Osaka which opens on March 15, 1970.

The previous speed record for circling the world had been held by Mr. Katsu Kohri (64), an aviation journalist, also using eastbound commercial flights who made it in 59 hours 40 minutes in March 1967. Photo: Miss S. Numata waves to the crowd after landing.



NEW PRODUCTS

Watertight Camera

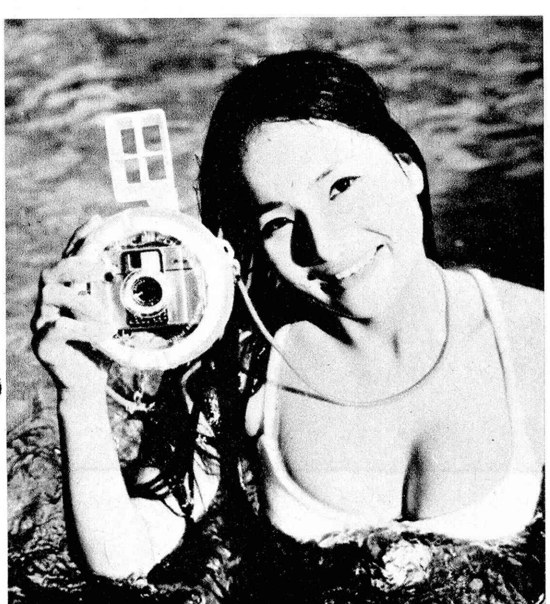
The Ricoh Camera Co. has with the approach of summer recently put on sale the new underwater camera "Ricoh Marine Case."

The sea is a paradise for holidaymakers in

summer. But on the beach, a camera becomes rather an unwieldy object as you must have experienced. Unless you take care to protect it from sea water and sand, you'll have plenty of remorse later on. In an effort to solve this problem, Ricoh Camera first embarked on the development of a special camera case. The result is a completely watertight case, making it possible to take photos in the water. Thereupon, the maker changed the plan and put a new underwater camera on the market.

The new camera consists of a Ricoh Auto-Half camera, on sale for some time now, in a special case. The camera features automatic exposure and self-winding. Therefore, when it is placed in the watertight case, all you have to do is just press the shutter from the outside. Thus the watertight camera is marked by a simple mechanism which is easy to operate. Photos can be taken freely down to a depth of five meters, the maker says. Moreover, as is evident from the maker's original objective, the possessor of the new camera does not have to worry about sand, rain or snow.

Experiments down to a depth of 30 meters have been completed, and as the specific gravity is only 0.96, there is no danger of the camera sinking even if you happen to lose your grip of it. The domestic price is 16,600 yen or more for the encased camera and 3,800 yen for the case alone. Photo shows the Ricoh Marine Case, expected to win great popularity on the beaches this summer.



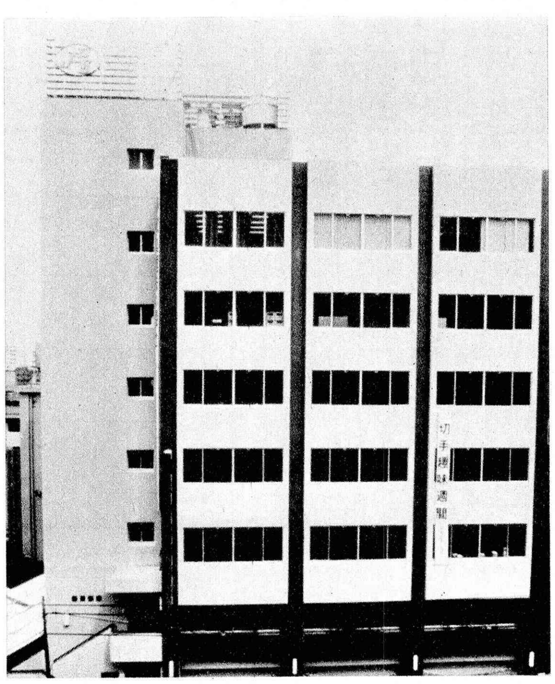
PHILATELY

Philatelist Palace Completed

The Philatelist Palace has recently been completed and opened in the heart of Tokyo as a comprehensive stamp center long awaited by philatelic enthusiasts. The eight-story building with a one-floor basement has cost $170,000. The Japan Philatelic Society raised the construction fund by issuing debentures and selling them to philatelists throughout the country.

The first floor houses a post office and a parking site, while stamps of all countries are exhibited on the second floor. The seventh floor has a stamp library and a conference room for the society members. In the basement, eight major stamp dealers have opened their branches, which have caught on well among stamp collectors.

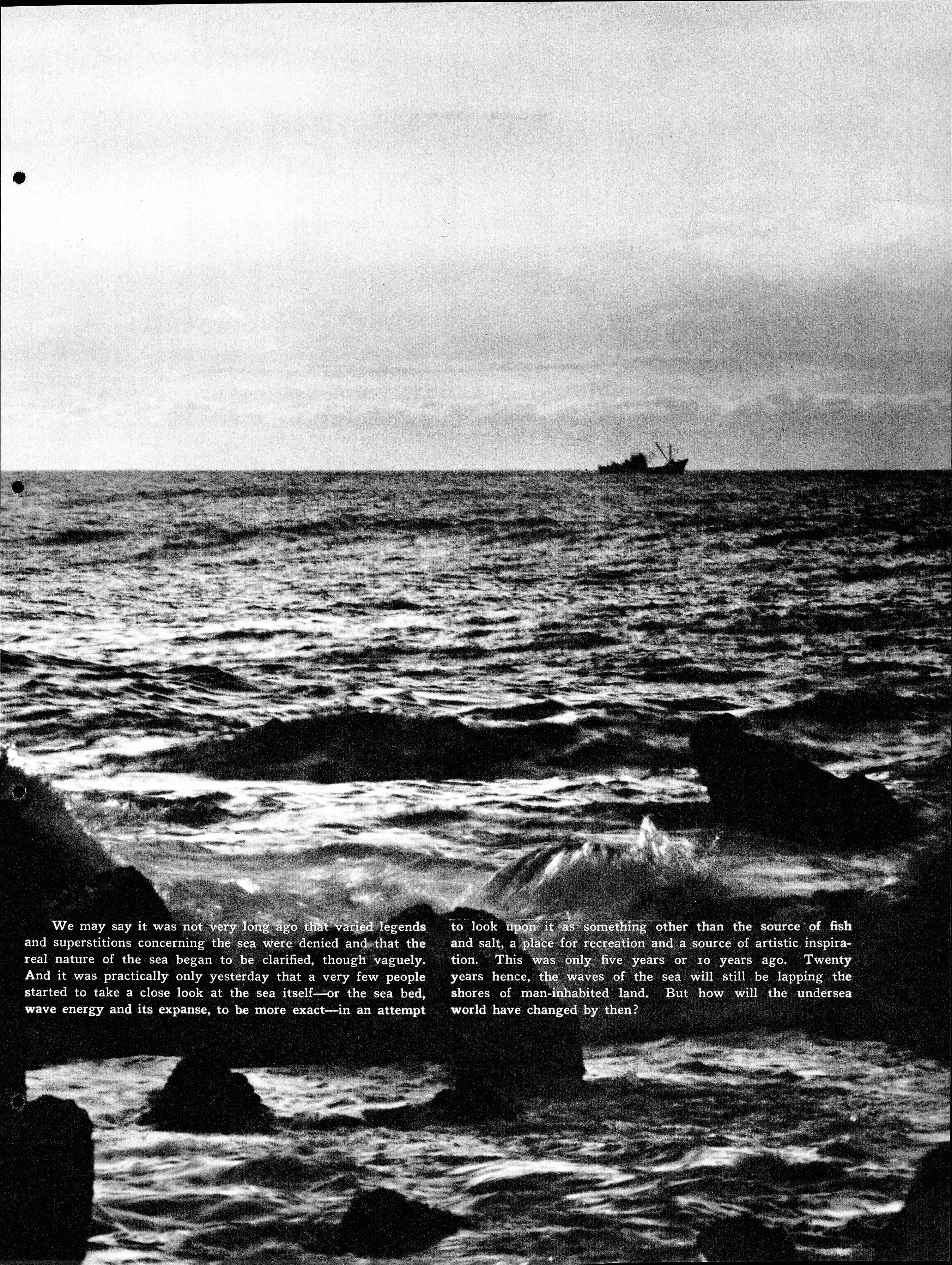
The "Universal Stamp Exhibition" was held to commemorate the completion of the building and the Philatelic Week, which coincided with it. On display were all kinds of stamps thus far issued in Japan as well as rare stamps of other countries, including ancient Chinese stamps, which completely fascinated Japanese philatelists. The exhibition marked a really auspicious start for the unique Philatelist Palace. Photo shows the new Philatelist Palace (2-2, Yoyogi, Shibuya-ku, Tokyo).





OPENING UP NEW FRONTIERS

THE VAST OCEANS AWAIT MAN



We may say it was not very long ago that varied legends and superstitions concerning the sea were denied and that the real nature of the sea began to be clarified, though vaguely. And it was practically only yesterday that a very few people started to take a close look at the sea itself—or the sea bed, wave energy and its expanse, to be more exact—in an attempt to look upon it as something other than the source of fish and salt, a place for recreation and a source of artistic inspiration. This was only five years or 10 years ago. Twenty years hence, the waves of the sea will still be lapping the shores of man-inhabited land. But how will the undersea world have changed by then?

CHALLENGE TO THE ONLY REMAINING UNKNOWN

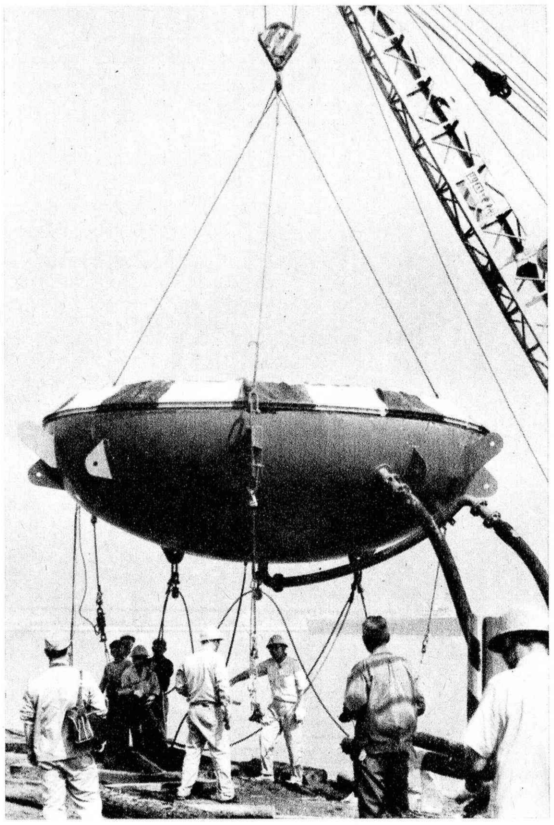
MANKIND has caught and existed on marine life from time immemorial. But when we investigate the oldest record of man obtaining anything else from the sea, we find this hardly goes back only half a century. But the sea and the sea bed possess unlimited resources. For apart from marine life, petroleum, coal, natural gas, iron and gold resources lie dormant below the bed of the sea. Furthermore some 40 elements, such as magnesium, fluorine and uranium, lap the shores of the world day in and day out under the very nose of mankind; there are incessant waves with energy equivalent to 30 kilowatts per hour per meter of shoreline. Thus the sea, occupying 70 per cent of the earth's surface contains inexhaustible riches, yet almost all of this wealth still defies exploitation by man.

Japan is an island country, small and lacks natural resources. It is only natural, therefore, that as man's knowledge of the sea has grown and expanded, there is an earnest desire to develop its resources. Take petroleum, accounting for 60 per cent of primary energy sources in Japan, as an example. Japan ranks only after the United States and the Soviet Union in the consumption of petroleum, and consumed as much as 150 million kiloliters of crude oil last year, almost all of which—or 99 per cent—was imported. So it is not too much to say that what has prompted Japan to undertake ocean development in real earnest is the urgent need to secure a stable supply of crude oil.

Since undersea oil well drilling was undertaken by the United States for the first time in 1938, the drilling techniques have made tremendous strides. Since then, Japanese makers concerned started to receive inquiries from abroad with regard to machines and apparatus for prospecting and drilling of undersea oil fields.

This happened to coincide with a maturing period for Japan's heavy and chemical industries, which had served as pacemakers for the structural advancement of Japanese industry. About this time, there was a rising trend to look to the vast oceans as new fields of industrial development. And this was typically shown by the attitude of the shipbuilding industry. Over the past decade, Japan's shipbuilders have ranked first and foremost, turning out the world's biggest tankers one after another and boasting the No. 1 shipbuilding volume. It is evident, however, that the shipbuilding industry in advanced nations will inevitably taper off gradually if kept within the current framework of its activities.

CONSIDERING the technology, production capacity and equipment now possessed by this industry, it is probably towards the ocean bed to which shipbuilders must next turn their attention. The undersea oil drilling rig, for instance, is a giant structure made up of a vast amount of steel materials. Its superstructure is a plant equipped with drilling machinery and living quarters, while the main body may well be called a special ship capable of floating, sinking and moving on the sea. Shipbuilding firms are naturally most suitable for the construction of such drilling rigs. Needless to say, the construction of ocean survey ships and deep-sea survey vessels is in the realm of shipbuilding technology. Therefore, shipbuilding firms and shipbuilding divisions of heavy industrial companies started to compete in the development of undersea oil drilling and digging equipment and related apparatus, and there were soon, many overseas orders for such equipment.



The first sea-bottom experiment of the undersea oil tank model proved a complete success.

In the various fields of ocean development, the production of undersea drilling rigs has made rapid progress, because of a large proportion of petroleum in the nation's energy sources and the existence of shipbuilding firms, which can readily develop the required technology. Heavy industrial firms, such as the Mitsubishi Heavy Industries, Ltd. and the Sasebo Heavy Industries Co., already can meet the demand for undersea drilling equipment from domestic oil firms, and moreover, export such equipment developed on their own. At the same time, research and development are also progressing concerning undersea oil tanks and land and sea-bottom facilities and equipment linking tankers or undersea oil fields with consuming centers. At the moment, 20 per cent of Japan's crude oil output comes from the bottom of the sea.

In addition to shipbuilders, a wide range of industries, including machinery, electricity, iron and steel, construction and trading, have launched out into the sphere of ocean development. Of course, measuring instrument and computer manufacturers are also watching the sea as a new field of activity. Equipment and facilities in the charge of these industries in the domain of ocean development include sea water-resistant steel, manipulators, ocean-bed work bases, apparatus for undersea work and measuring instruments.

Another important field of ocean development is the construction of sea water desalting plants to utilize tremendous amounts of sea water for industrial use and drinking. At present, Kuwait produces the largest amount of fresh water from sea water in the world, and Japan's Ishikawajima-Harima Heavy Industries Co. has exported a giant desalting plant to that country.

Wave energy is utilized for man's benefit in the form of the wave-activated generator. In this field, Japan leads the world and recently achieved the power output of 20 watts for constant consumption. At present, the Maritime Safety Agency uses more than 100 navigational aid buoys equipped with wave-activated generators. Under this power generation system, the air is pushed and pulled by the undulation of waves, and the resultant change in air pressure is transmitted to rotate an air turbine for power generation.

In any project for exploitation of sea-bed resources or human habitation on the sea bottom, what is first necessary is for man to dive into the sea. To that end, the Taisei Con-

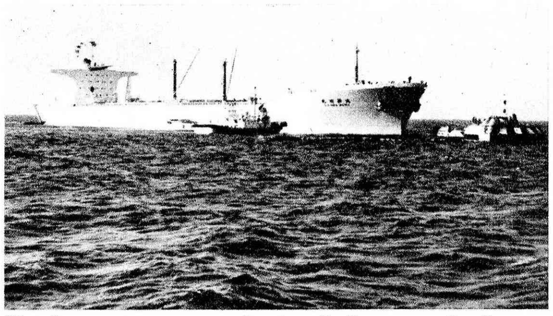
struction Co., a major construction firm, has developed an undersea observation room for survey of ocean-bed resources and the quality of water. It is a cylindrical structure, 12 meters high and three meters across, which floats and sinks.

Other apparatus developed for undersea work include submarine telephones, aqualungs, and submarine bulldozers. Also developed are submarine still cameras, submarine movie cameras and submarine communications apparatus.



Mitsubishi Heavy Industries has built and exported the sea-going oil drilling rigs.

VARIOUS plans, meanwhile, have been mapped out to build cities on the sea, in the sea and on the sea bottom. If manganese, iron, cobalt, nickel, copper and other resources, for which Japan primarily relies on other countries, exist in great quantities in the nearby sea bed, she must undertake their development. The extraction of chemical elements alone from sea water will undoubtedly give birth to a big industry which may well be called a "sea water industry." Ocean development is a "big science," which combines a broad range of natural science and industrial technology as a whole. Some individual basic techniques have already been established. But many difficulties have yet to be overcome to adjust to totally different conditions from

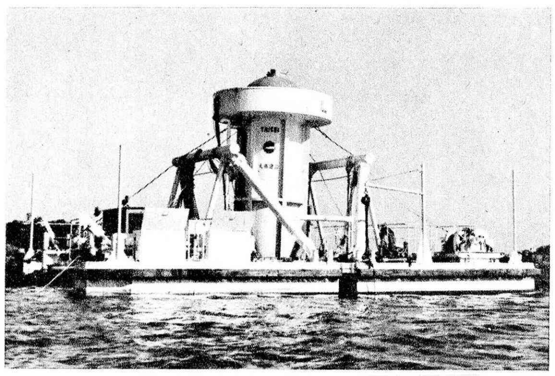


Tankers are moored at off-shore and charge the cargo-oil at the "Floating Oil Terminal."

those on land in regard to, say, pressure, flow, air, light, temperature, sound and corrosion. The fight to tap the sea has only just reached the starting line after a period of preparatory work.

At present, the total population of the world is estimated at approximately 3,300 million, and it is expected to rise about 1.5-fold to 5,000 million 20 years hence. This population growth will gather added momentum with the further progress of medical science. In that event, now accessible resources alone will not be enough to feed every one. Furthermore, even if petroleum and coal but also other undersea resources are developed smoothly, there is the problem of space for human habitation. Of the total surface of the earth, land accounts for a mere 29 per cent.

If industrial complexes and chemical plants can be submerged on the sea bottom, land areas will become more spacious and easier for living. Apart from the question of when the sea bottom will become more comfortable for human habitation than land, will it be



Underwater observation room was completed as the direct way to better know the ocean-bed.

possible to live on the sea bed 50 or 100 meters deep for one month, six months or a year for the purpose of work, surveys or even daily life?

Man has conquered the desert on the strength of water . Then what is necessary for man to live on the bed of the sea? It is oxygen and force that resists the pressure of sea water. Oxygen may be taken down to the sea bed through a pipe. But what about the water pressure? Even if one leaves the earth to engage in the development of space, the pressure only drops from one atmosphere to nil. In the case of the sea, however, pressure increases at a rate of one atmosphere per 10 meters of depth. It is two atmospheres on the sea bottom at 10 meters, but increases to as much as 11 atmospheres at 100-meters. Accordingly, mankind's march in the development of oceans may well be termed a challenge to pressure.

In a sea-bottom habitation experiment, conducted in France near Marseilles in September 1962, two oceanauts spent eight days at a depth of 15 meters. They kept in touch with the land crew by telephone and were constantly watched through television, and lived at the sea bottom for the period, while enjoying TV broadcasts from the homeland. Air pressure was two atmospheres or almost the same as the water pressure at a depth of 15 meters. Similar experiments were repeated, finally proving that human beings can live at

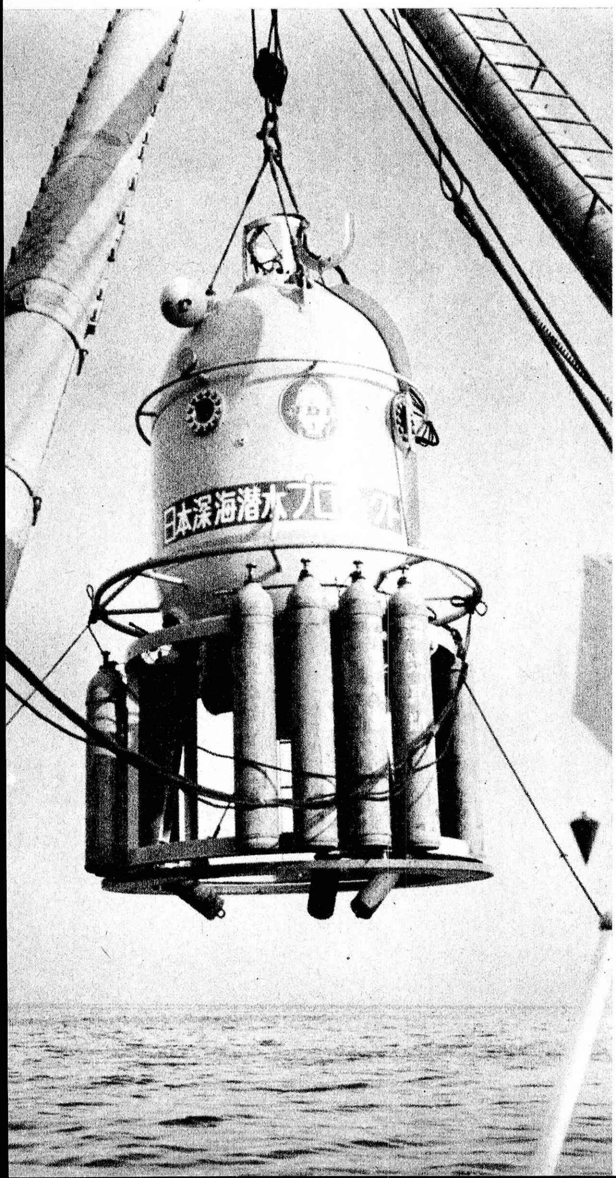
the sea bed 100 meters deep for as long as one month. In the United States as well, similar tests exceeded the 100-meter mark. As for the pressure-resistant structure itself, a French bathyscaphe established a deep-diving record of 10,916 meters in the Mariana Deep in 1960.

IN Japan, a sea-bottom work base project has started as an absolute necessity for ocean development. This calls for stationing four oceanauts at a depth of 100 meters for a period of one month by 1971. But if a dive is made in a submarine-like ship with an inside pressure of one atmosphere, oceanauts cannot venture out of the vessel. Therefore, the project for human habitation at the sea bottom is designed to accustom human beings to an environment with the same air as that of water at the sea bed.

The projected equipment consists of a submarine station, support facility on the sea and a submarine elevator connecting them. Pipes and communication lines link the sea-surface facility and the base on land to supply gas for respiration and electricity and to maintain liaison and surveillance. When oceanauts are alternated, they are brought up by the submarine elevator, which links up with a decompression chamber in the surface ship. Depending on the depth of the submarine station, pressure is gradually reduced over a period of several hours to several days. On the contrary, when oceanauts descend to the submarine station, they are first subjected to increasing pressure in the same chamber for several minutes and then lowered by the submarine elevator.

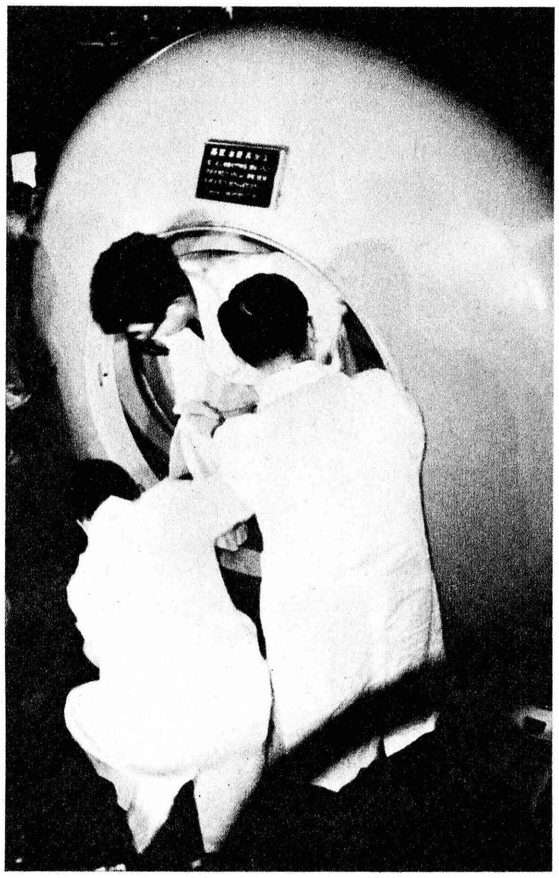
The submarine station is a cylindrical tank with a diameter of about three meters, seven to 10 meters in length and serves as a small residential unit containing a bedroom, laboratory, communication room, dining kitchen and shower room. The support buoy on the sea is equipped with oxygen container, helium container, fresh water tank, power generating equipment, watch apparatus, a decompression chamber, crane, etc. Water and air are sent in through hoses, while communication lines are used for TV transmission and the telephone link. A trial-manufactured submarine elevator has finished tests of 60-meter descents with a load of 3.8 tons and three persons aboard. Before long 100-meter-descent tests are to be started.

Japan Deep-sea Project built an "elavator" for shuttling between sea-bottom and surface.





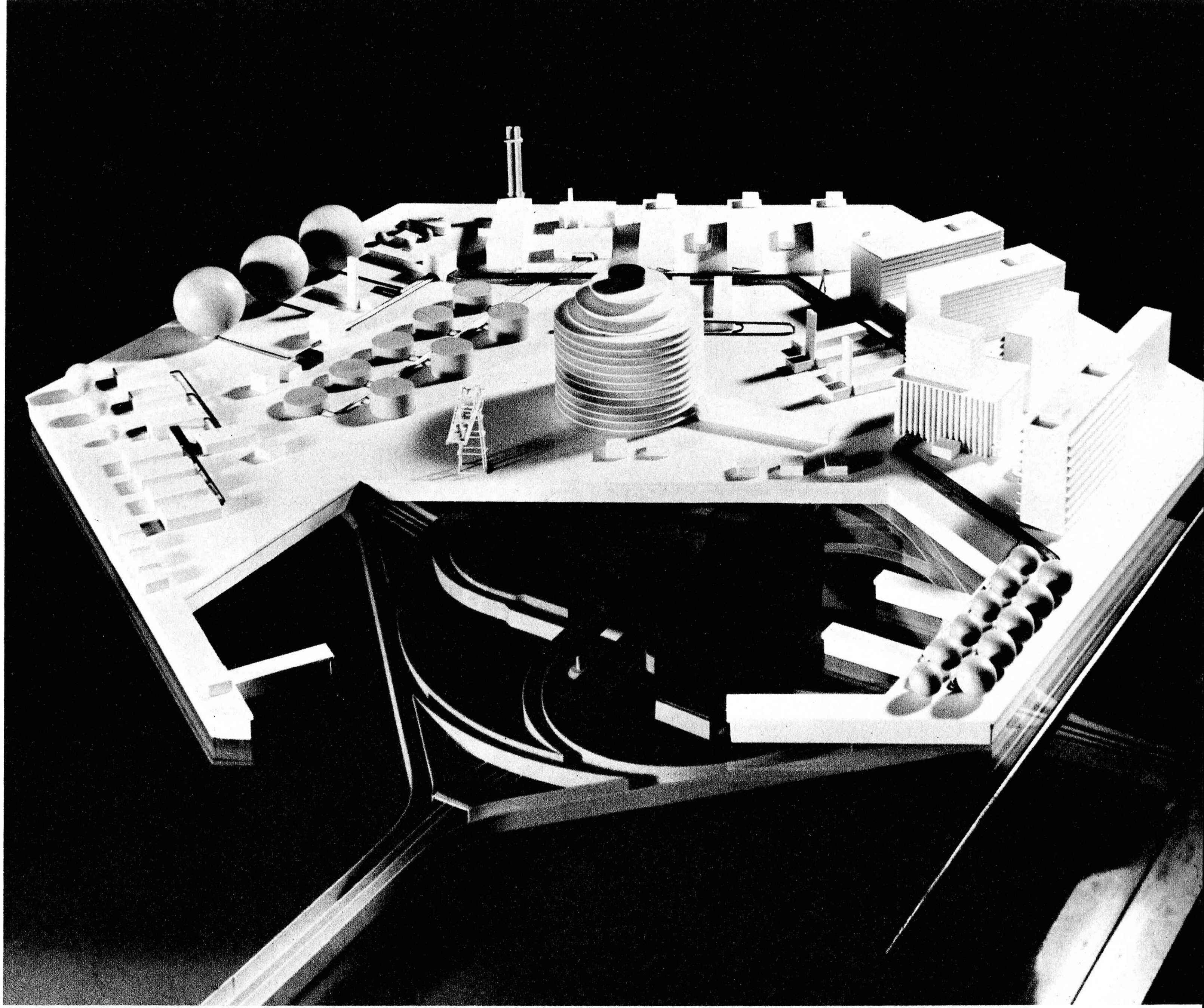
Inside the undersea elevator at a depth of 60 meters below the surface with oceanauts.



The sea-bottom condition is simulated for the oceanauts in a high-pressure laboratory.

The target for the sea-bottom work base is unbounded mobility at still greater depths. To widen the scope of operation, the surface support facility should be eliminated, and this will be more economical. The problems of communication, food and water will shortly be resolved, but the most difficult problem is supply of electric power. It is extremely difficult to make small-sized batteries to last for long periods, and the only alternative is atomic power generation. After all, the submarine station will be something like a small-sized nuclear-powered submarine with pressure-increasing and decreasing capability.

When the depth increases, the problem of breathing occurs before that of pressure. At present, helium is used for deep-sea respiration, but when the pressure rises, the gas comes to have an anesthetizing effect. Therefore, the depth limit is 500 meters. In contrast, with the case of hydrogen gas, breathing will be possible down to a depth of 1,500 meters. Beyond that, a system of exchanging oxygen and carbonic acid gas through a window of permeable film, such as silicon rubber, is conceivable. That is, the film will be impervious to water, but will pass oxygen and



Undersea complex model of Taisei Construction Co. represents industrial plants and roads.

carbonic acid gas. Now, research on such films is being undertaken by Dr. I. Nashimoto of the Tokyo University of Medical and Dental Science. If such a film capable of taking oxygen from sea water is attached to the human body through surgical operation, man will become able to swim about freely without oxygen containers. In that case, it may be said, the human race will, in effect, join marine life.

JAPAN, it is said, is second to none in the academic standard of science relative to the ocean. But Japan's oceanology, based on such academic knowledge, still leaves something to be desired regarding both its level and system. Oceanology means everything to ocean development, such as the exploitation of resources, development of related machines and apparatus, and possibility of life in the special environment of the ocean. Therefore, it can be established only through the organic combination of all related sciences, such as mechanical, electrical and chemical engineering, and biochemistry.

Moreover, colossal amounts of money are required for ocean development, while its outcome will affect the future of the nation. Therefore, it must be undertaken as a national project. The Ocean Science and Technology Council, consisting of relevant Government authorities, such as the Science and Technology Agency, the Transport Ministry and the Ministry of International Trade and Industry, submitted a recommendation to the Prime Minister as early as four years ago to the effect that the system of study on ocean science and technology should be improved and expanded.

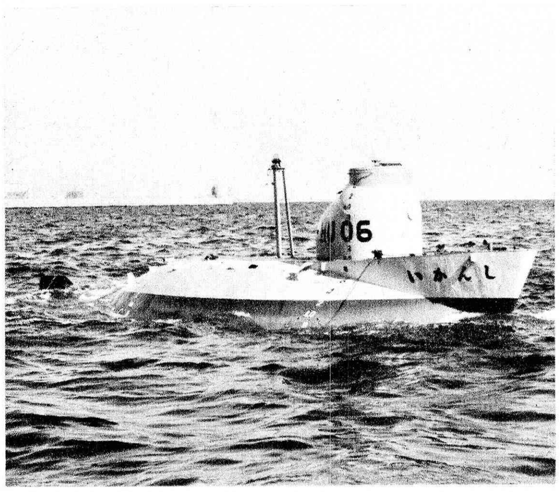


Unmanned lighthouse generating electricity using the wave energy has kept itself shining.

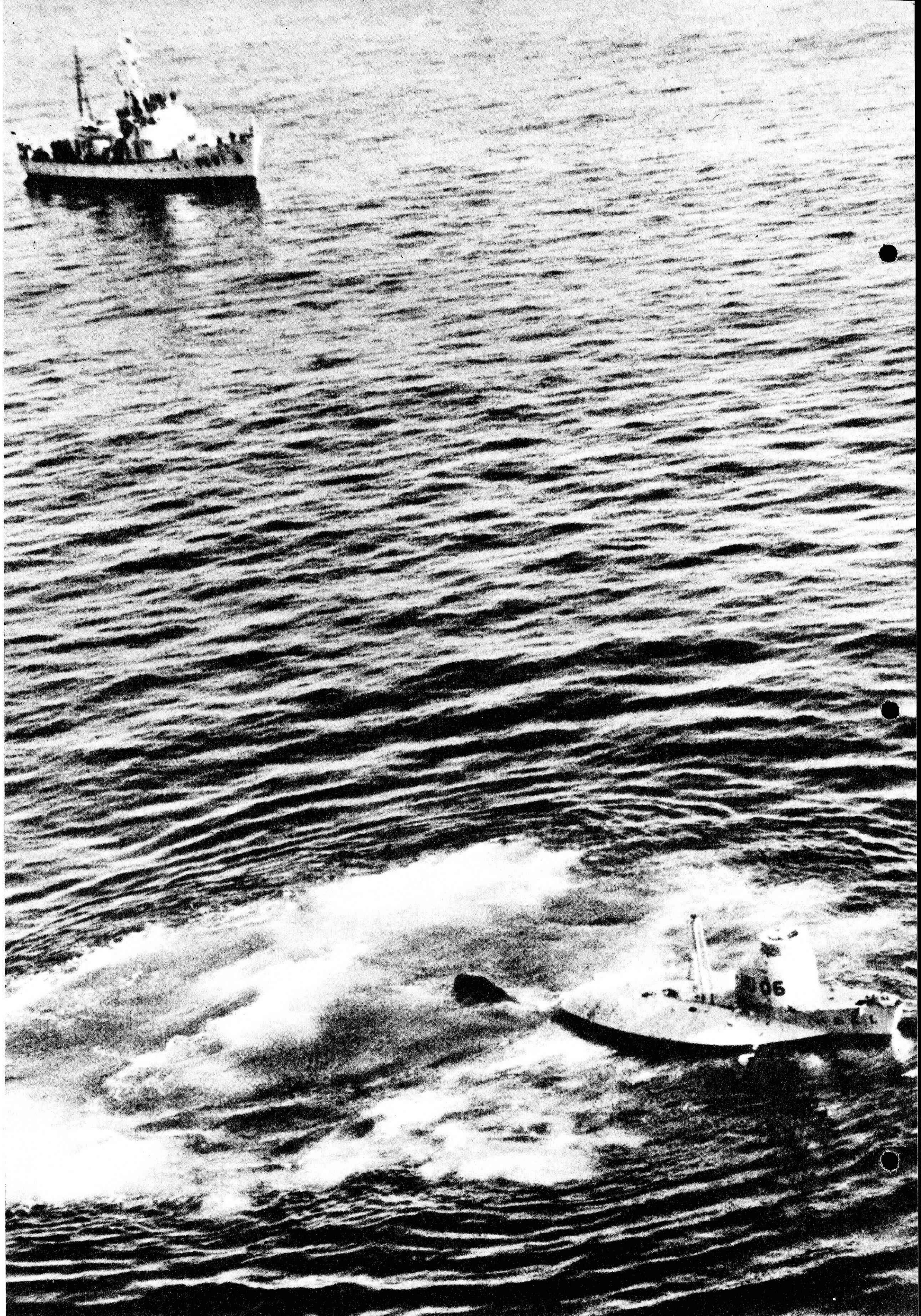
On the other hand, ocean development is prone to have political and military implications of an international nature. For example, if international competition in ocean development is left as at present, big powers with huge funds and high technological standards may eventually monopolize the oceans of the world. It really stands to reason, therefore, that from such a viewpoint, the United Nations has come up with an appeal for "international collaboration in the development of the sea."

However, it is all too evident that in future, the earth will eventually become too small for human habitation, and natural resources will become deficient. If only international cooperation is ensured, it is said, the ocean development will ultimately result in enabling mankind even to control weather and climate. Japan used to be known as a major maritime country and blessed with vast continental shelves and endowed with great technological capability, she will no doubt be able to assist develop the oceans for the benefit not only for her own industries and people, but for mankind in general.

SHINKAI, THE ULTRAMODERN MESOSCAPHE



Though small, the Shinkai boasts the highest performance and the best safety equipment. The name Shinkai (Deep Sea) was chosen from various names submitted by primary school children throughout the country. Right: The Shinkai leaves mothership and starts to dive.



THE sea is the only frontiers still left on the face of the earth. Since the birth of mankind, it has continued to lie at our feet—far nearer than the moon. But we are still in the dark about its mysteries and we should know more about the sea.

The simplest way to know the sea is to dive into it. But because of heavy water pressure, this method enables man to know only the surface. To protect the human body from water pressure, diving bells and submarine ships have been developed. Japan already has the diving ships Kuroshio and Yomiuri in active service. They can descend to depths of 200 and 300 meters, respectively. Recently, the ultramodern mesoscaphe Shinkai of the Maritime Safety Agency has made its debut. Completed in a year and a half by the Kawasaki Dockyard Co. with rich experiences in the construction of submarines, it is a multi-purpose survey ship capable of descending to a maximum depth of 600 meters.

This ship with a displacement of 90 tons measures 16.5 meters in length and 5.5 meters wide and is manned by a crew of four. Though small, it is equipped with the most advanced machines and apparatus for safety and other purposes.

The vessel has a manipulator capable of grabbing objects on the sea bottom through remote control from inside the ship, photographic equipment and devices for collecting samples of water and plankton. In addition to these and other basic apparatus, it is equipped with telephone, ITV and wireless communication systems, while a rich variety of observation instruments enable a wide range of studies in the fields of geology, biology, geophysics and oceanography. The greatest pride of the ship is its storage batteries. To prevent the air from being polluted by battery-discharged hydrogen gas, the batteries are placed outside the room—that is, in the sea. But they are contained in an oil-filled bag to separate them from sea water. The Shinkai has a maximum submerged speed of 3.5 knots and can remain underwater for 10 hours at a cruising speed of 1.5 knots.

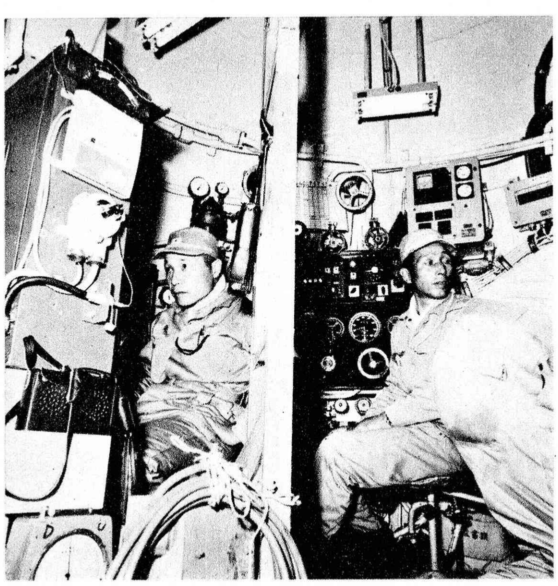
THE biggest problem in the structure of deep-sea ships is resistance to heavy water pressure. The Shinkai has two large spheres inside. The front one is an observation room and the rear for machinery.

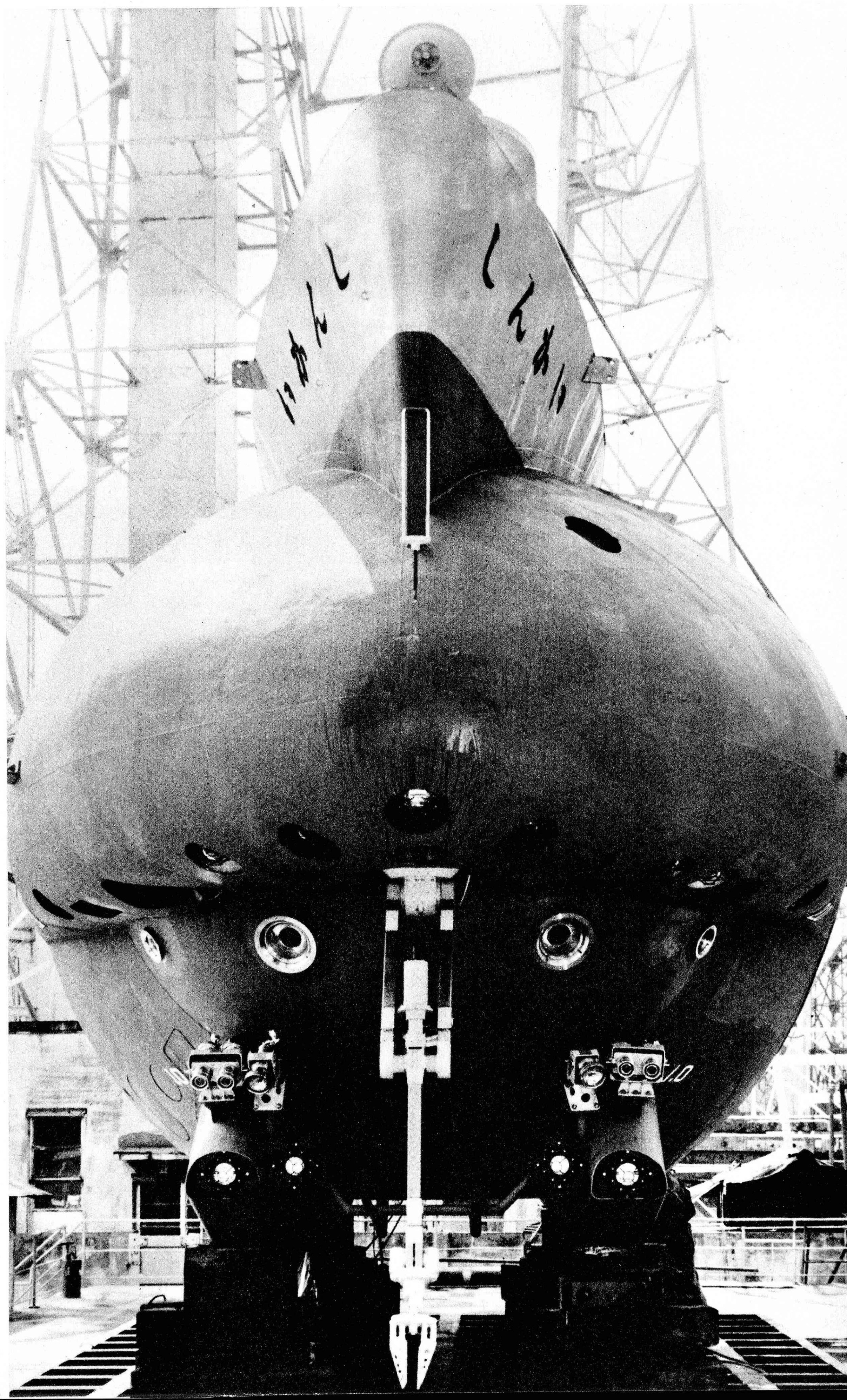
That is, the ship's two main sections are contained in spherical structures so the pressure is equally distributed and to minimize the surface area. If the submerged ship becomes struck in mud or cannot surface because of obstructions, such as rocks, the crew uses an escape device that can ascend on its own. And this is also a spherical structure with an outer diameter of 1.75 meters.

The Shinkai has largely brightened the prospects for Japan's ocean development efforts. The next deep-sea survey vessel will be able to dive still deeper and engage in various types of work besides surveys. Research on such a ships is already making steady progress in various quarters.

When the Shinkai descended to the depth of 600 meters for the first time, the crew reported what they saw at the sea bottom, by radiotelephone as follows:

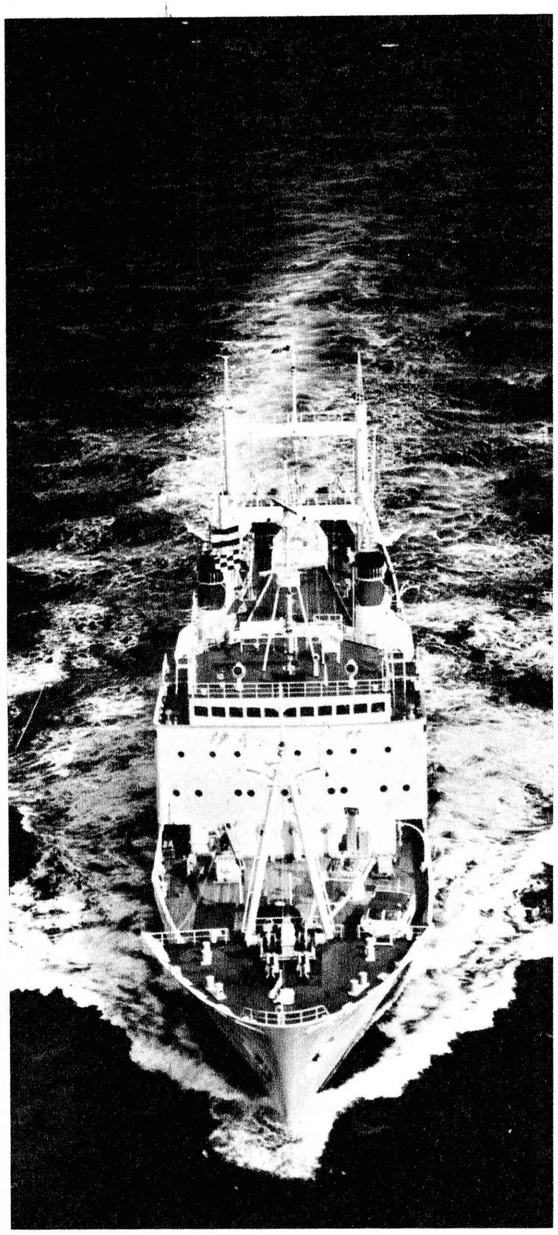
"Forty minutes after starting to submerge, we saw numerous small fish swimming at a depth of 350 meters, shining beautifully in floodlight from eight projectors attached to the outside of the ship. At a depth of 400 meters, we witnessed schools of young prawns, and when we stopped, they converged on the floodlight. At 600 meters, the temperature is 5.5 degrees in the sea water around us and 23 degrees inside our ship."





Above: The wall of spherical living quauters of the crew is covered with instrument panels all over. Right: The Shinaki's bow section, with cameras and light projectors. The manipulator is capable of grabbing objects through remote control system from inside.

TILLING THE SEA FOR BIGGER OUTPUT



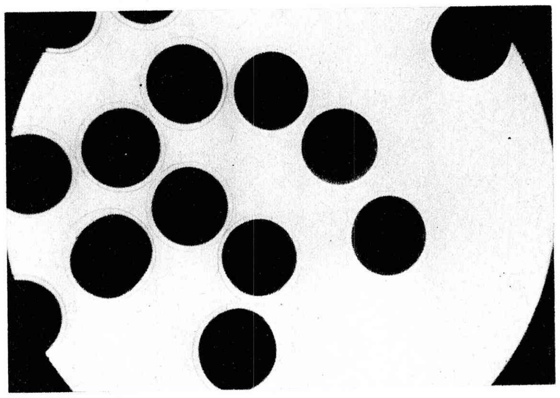
The fishery survey ship Kaiyo Maru (3,210 tons) of the Fisheries Agency repeats deep-sea trawling for an ecological study of fish.

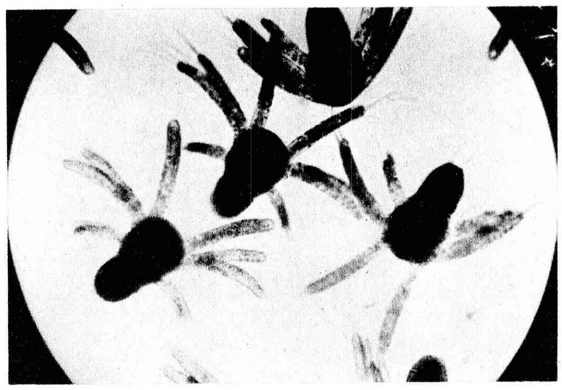
IT is said that nothing is severe than life of fish. The life-and-death struggle for survival is a daily occurrence. Even in the same species, fish feed on their fellows half their size. Even though tens of thousands of eggs hatch at the same time, less than one per cent survive to become young fish. Furthermore, just as our weight does not increase by one kilogram even if we eat food of the same weight, that of a fish does not increase as much as that of the feed it consumes. When a large school of sardines happens to encounter a large one of mackerel, almost all of the former perish. But the weight of mackerel, which have swallowed up the sardines, rises by only about a quarter of the dead sardines' weight. Thus the sea is not so profitable a farm as it might seem.

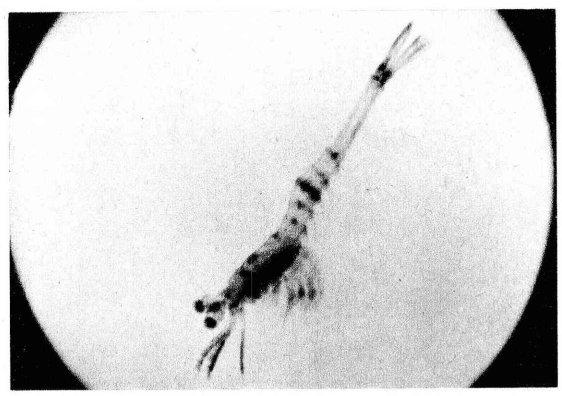
Nevertheless, the sea has been a treasure house of marine life for mankind. Whenever the quantity of netted fish dropped, mankind changed its fishing grounds. Moreover, fish hauls have never ceased to increase. The fish production of the world's major fishing nations has shot up threefold in the past 10 years. But in recent years, coastal fisheries of many nations have tended to become stagnant, and Japan is no exception. Many reasons are cited for this phenomenon — for instance, meteorological conditions, water pollution and changes in ocean currents. In the final analysis, however, the fundamental reason is that the fisheries of the world have so far relied only upon the natural feeding process — that is, large fish preying upon small fish, which feed on plankton, and have thus sought to exploit the fruit of such process alone.

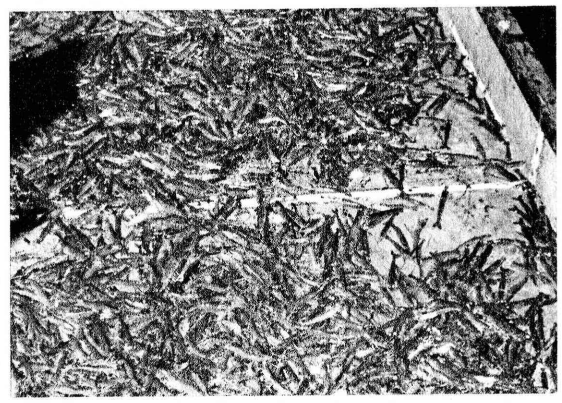
The population of the world is expected to climb to about 6,000 million at the end of this century or twice the present level. And if, in that event, all the people of the world, including developing countries, are to be given as much nourishment as advanced nations are taking at the moment, the production of animal protein alone will have to be expanded at least fivefold. There will be a limit to agricultural development on the limited land area, making it imperative to study "tilling the sea." And this gives rise to the concept of breeding, culture and ultimately, "undersea pastures."

As regards this switchover from catching to "raising fish," Japan has special techniques unexcelled in other countries. Breeding techniques for fresh-water fish, such as carp and trout, have also made fair progress in other nations. But Japan is the one and only country that operates laver and oyster farms and cultivates scores of species of marine life, such as "wakame" seaweed *(Undaria pinnatifida)*, tangle, prawns and yellowtails, on vast tracts of tidelands. For instance, Japan has now engaged in oyster culture for 200 years and the artificial hatching of salmon for scores of years.



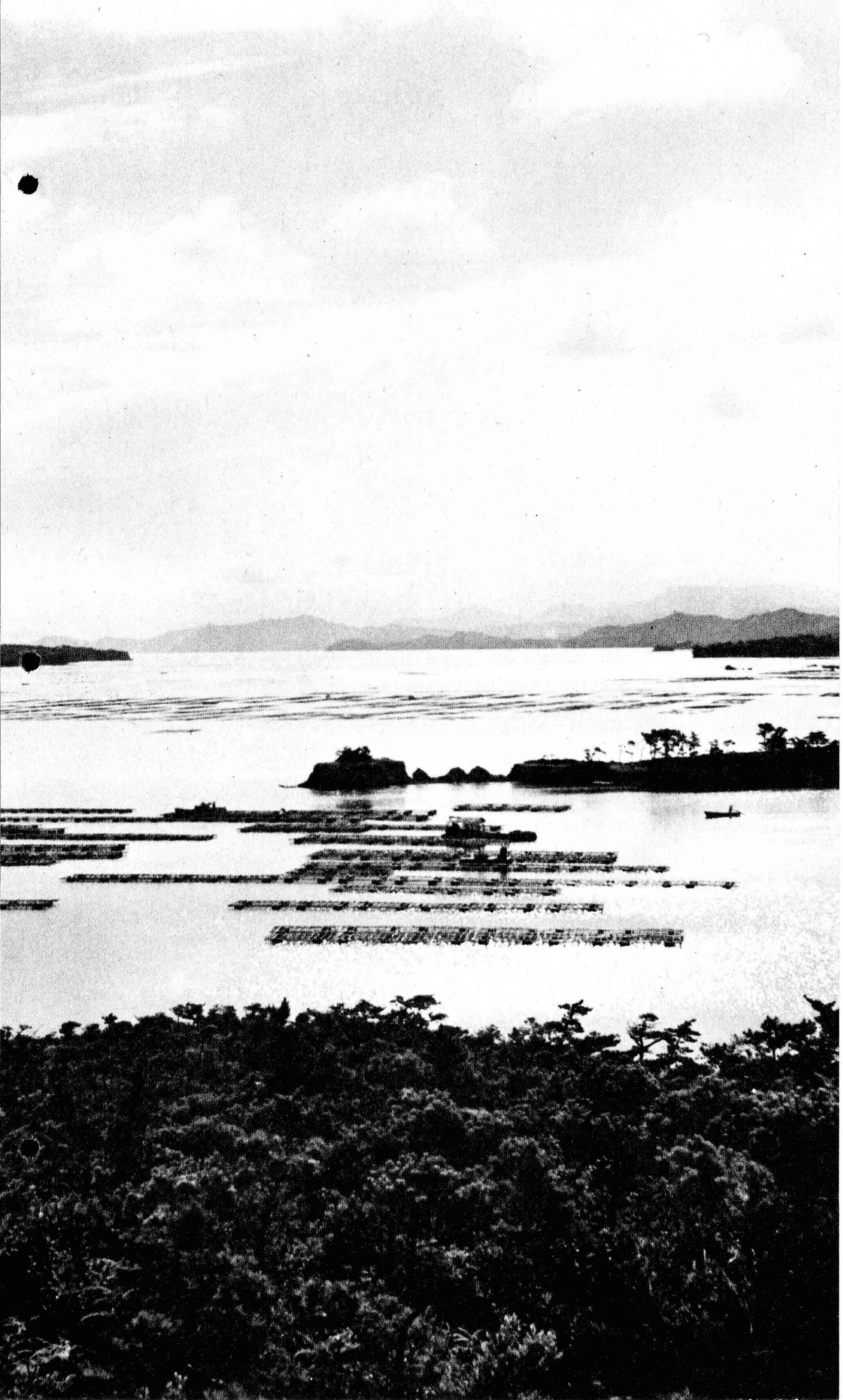






Metamorphosis of prawn from egg to adult weighing 20 grams. Prawn Culture Co. is thus turning out prawns in large quantity.

Pearl bed in Ago Bay, known the world over.





NEVERTHELESS, most of the present culture projects are limited to those species which can be raised without giving feed, such as laver and oyster, or yellowtail and others which are caught while immature and then grown with feed. As for the artificial hatching and raising on a commercial scale, there have so far been only several successful cases, including prawns and oysters. Therefore, fishery scientists are now pushing intensive research on the artificial hatching and "seeding" to develop "mass culture" techniques for various other species of fish.

Once "mass seeding" becomes possible, the only remaining problem will be the techniques of raising and controlling young fish. In this connection, the Fisheries Agency has recently come up with the idea of "undersea pasture ground" similar to pastures on land where cattle and horses are raised. The ultimate objective is to gather fish in certain undersea areas, give them feed, have them spawn, and make young fish grow and then multiply.

But how can fish be assembled in a certain fixed area? This has to do with feed, but first, concrete blocks, discarded buses, abandoned ferroconcrete apartment houses, etc. are sunk to create an environment that can attract fish. Then automatic feeding devices will be installed on or in the sea, which will emit supersonic waves when feed is sprinkled. This will cause fish to gather around the devices through conditional reflex whenever such supersonic waves are emitted. Research is also in progress on the use of electromagnetic waves or laser beams as fences of the "undersea pasture grounds." To enhance the effectiveness of the system, the utilization of warm waste water from atomic power stations is being studied to raise the temperature of sea water during winter.

Feed for fish costs far more than may be generally imagined. In the case of yellowtail raising, for instance, the weight of the fish increases by only one kilogram when six kilograms of sardines and smallfish are given as feed. Price difference between raised fish and feed fish will ensure profits, but the present system will not suit the purpose of "undersea pasture grounds"—that is, to have a sufficient supply of animal protein. To overcome this difficulty, research and experiments in giving artificial feed to fish have been in progress, and recently, it has been discovered that "petrofood" is the best substitute for small fish and fish meal.

The Fisheries Agency is anxious to set up an experimental "undersea pasture ground" by the end of this year. Thus far, it has generally been considered that the culture of marine products is possible only in calm waters in deep inlets. The day will not be distant, however when fish farms will be expanded out to sea along vast stretches of coast.



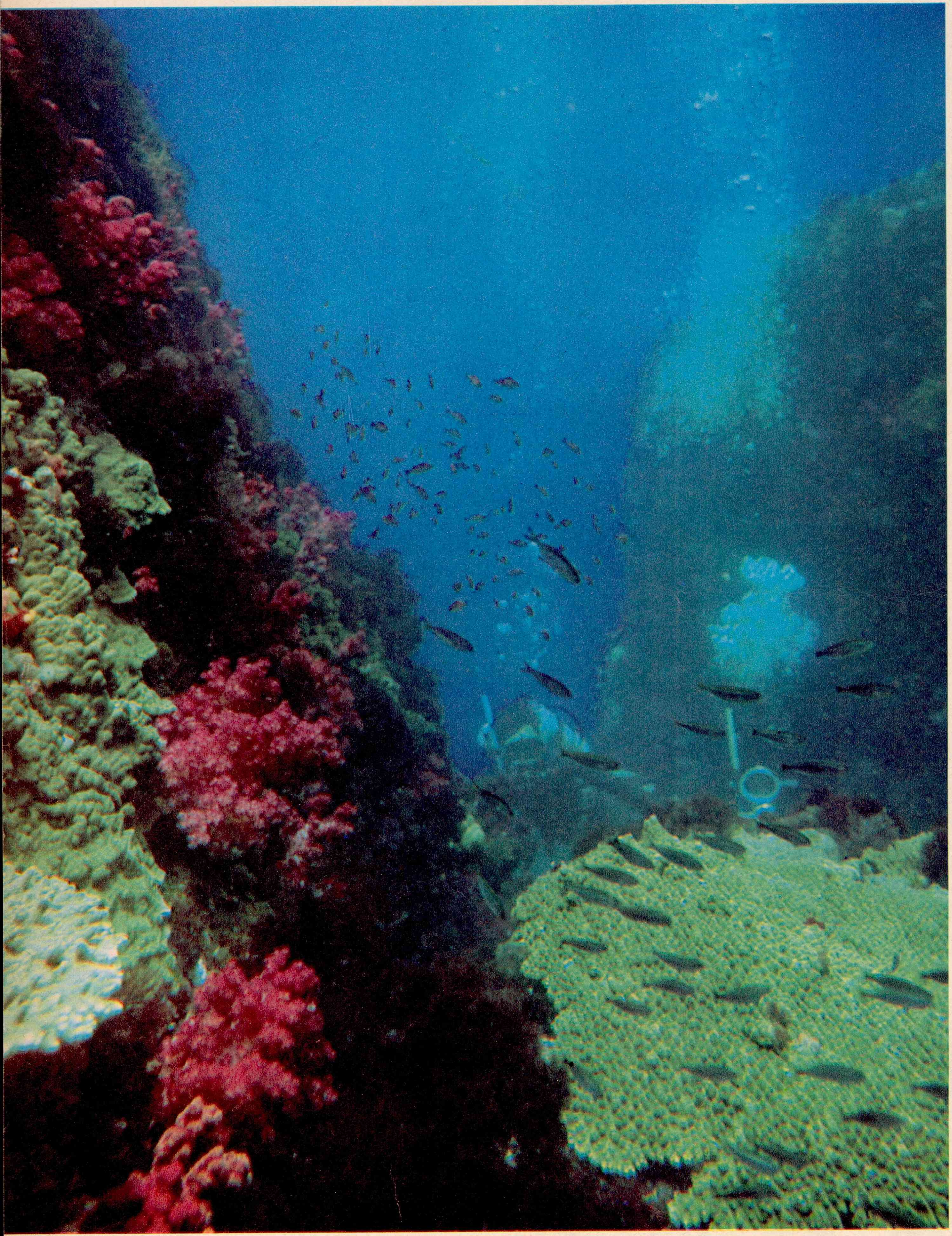
Taiyo Fishery Co. is cultivating "Hamachi" in an environment free from natural enemy. Top: Hamachi (immature yellowtail) swarm around feed given at regular intervals.

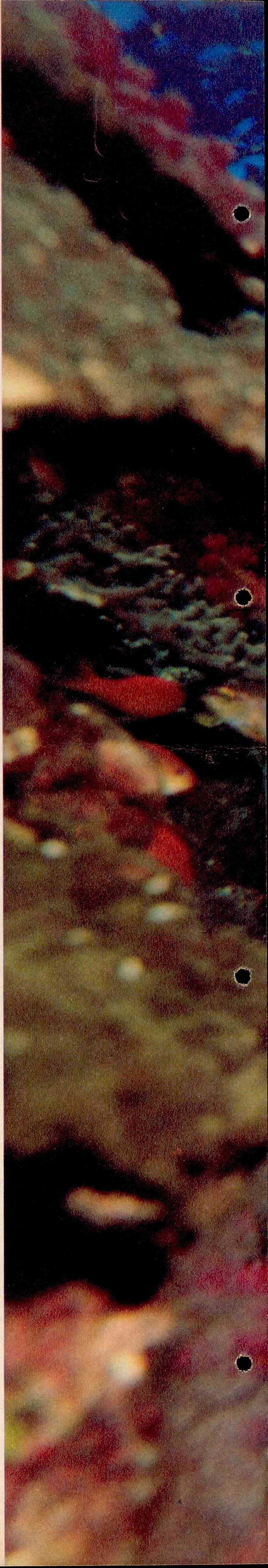
A DREAM COME TRUE

SIGHTSEEING UNDER THE SEA SOON TO BE REALIZED

Photos by AKIRA TATEISHI
Marine Art Center







Above and right: Underwater scenery of the sea of Uwa. Diverse species of corals and brilliantly colored tropical fishes present a beautiful spectacle like a flower garden in full bloom. It will not be long before everyone will be able to go down into the sea and view its wonders, hitherto enjoyed only by scuba or skin divers.



DAWNING OF THE AGE OF UNDERWATER TOURISM

A long cherished dream of mankind to gaze at leisure upon the wonders existing under the sea is fast becoming a reality in Japan. Beneath the sea lies a vast treasure house of exquisite beauty and color—schools of many-colored fish, multi-shaped coral reefs and forests of waving seaweed—all these, hitherto seen only by deep sea divers will be opened to the eyes of the general public shortly with the inauguration by the Government of an "undersea park" system, which also heralds the advent of a so-called "age of underwater tourism."

There are two purposes in establishing undersea parks. The first is the preservation of natural scenery under the sea, and second to provide places of recreation for the general public, just as national parks and quasi-national parks on land serve the same purposes.

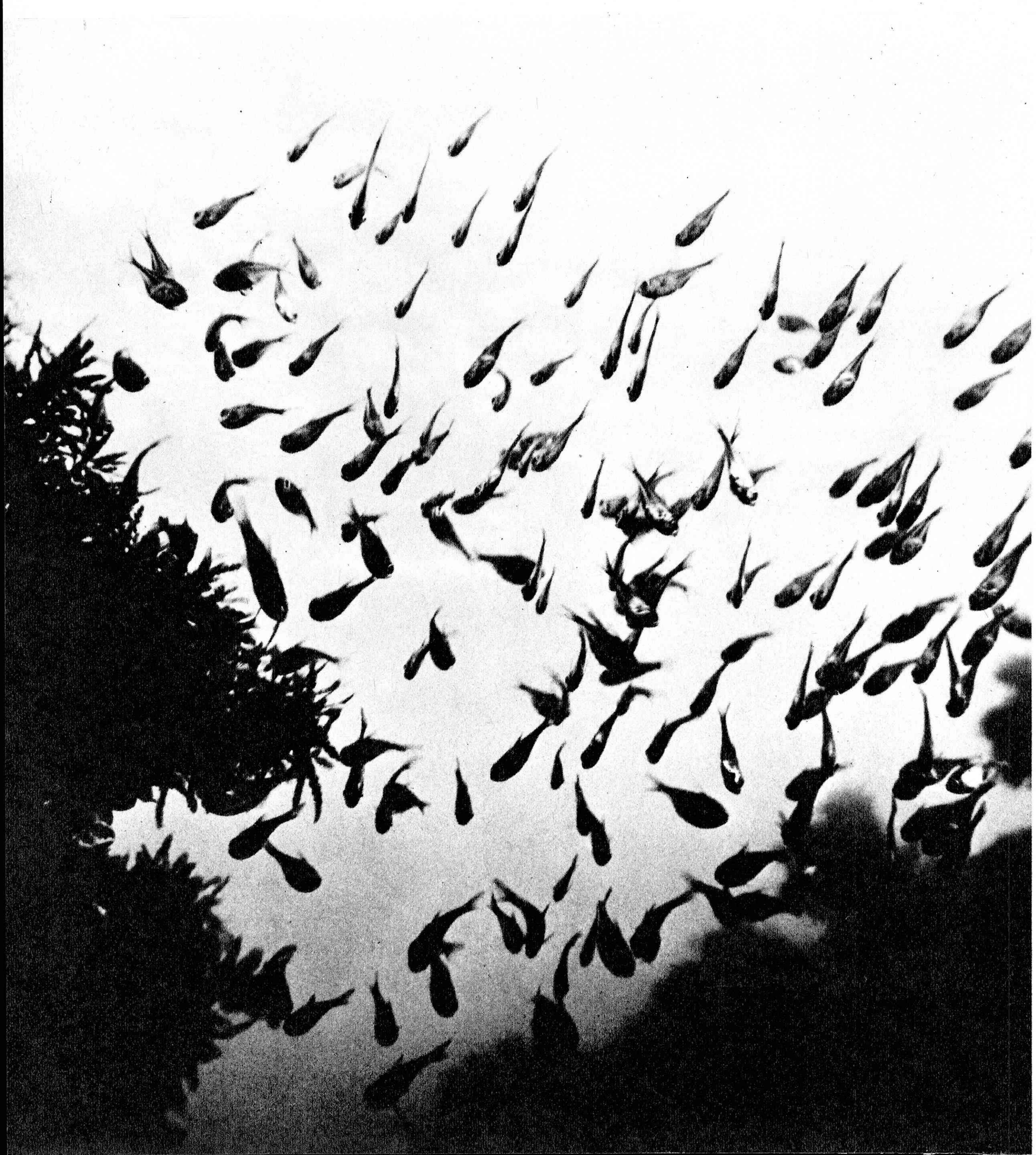
The Japanese archipelago, which arches some 3,000 kilometers from north to south like a long narrow bow, is blessed with the ever-changing beauties of nature, ranging from sub-frigid to sub-tropical scenery. And the seas around the islands are also equally blessed with wonderful scenery beneath the surface. Washing the shores of the Japanese islands are four major sea currents—the warm Kuroshio and Tsushima Current and the cold Oyashio and Riman Current, all of which have created an ideal habitat for hundreds of different species of marine life.

The most representative inhabitants of the sea where the warm currents flow are beautiful multi-colored tropical fishes and exquisite coral reefs. The sight of schools of these fish swimming among the coral is reminiscent of a field abloom with multi-hued flowers. On the other hand, where the cold currents flow, forests of huge waving seaweed such as the sea tangle can be found among which swim a variety of fish not found in warmer waters.

Ever since 1966, the Japanese Ministry of Health and Welfare has been conducting preliminary on-the-spot surveys of the waters surrounding the Japanese islands to discover sites suitable for designation as undersea parks. In order to qualify for such designation, the site must fulfil the following seven requirements:

(1) The site should be within one kilometer from the shore of a district already been designated as a national or quasi-national park. (2) Marine fauna and flora must be abundant and variegated and the seabed must also be undulated. (3) The water must have a high degree of transparency. (4) The depth must not be more than 20 meters. (5) The water must not be exposed to pollution caused by the outflow of water from rivers. (6) Sea currents and waves must not be too strong. (7) Land near the site must be available for the construction of related facilities.

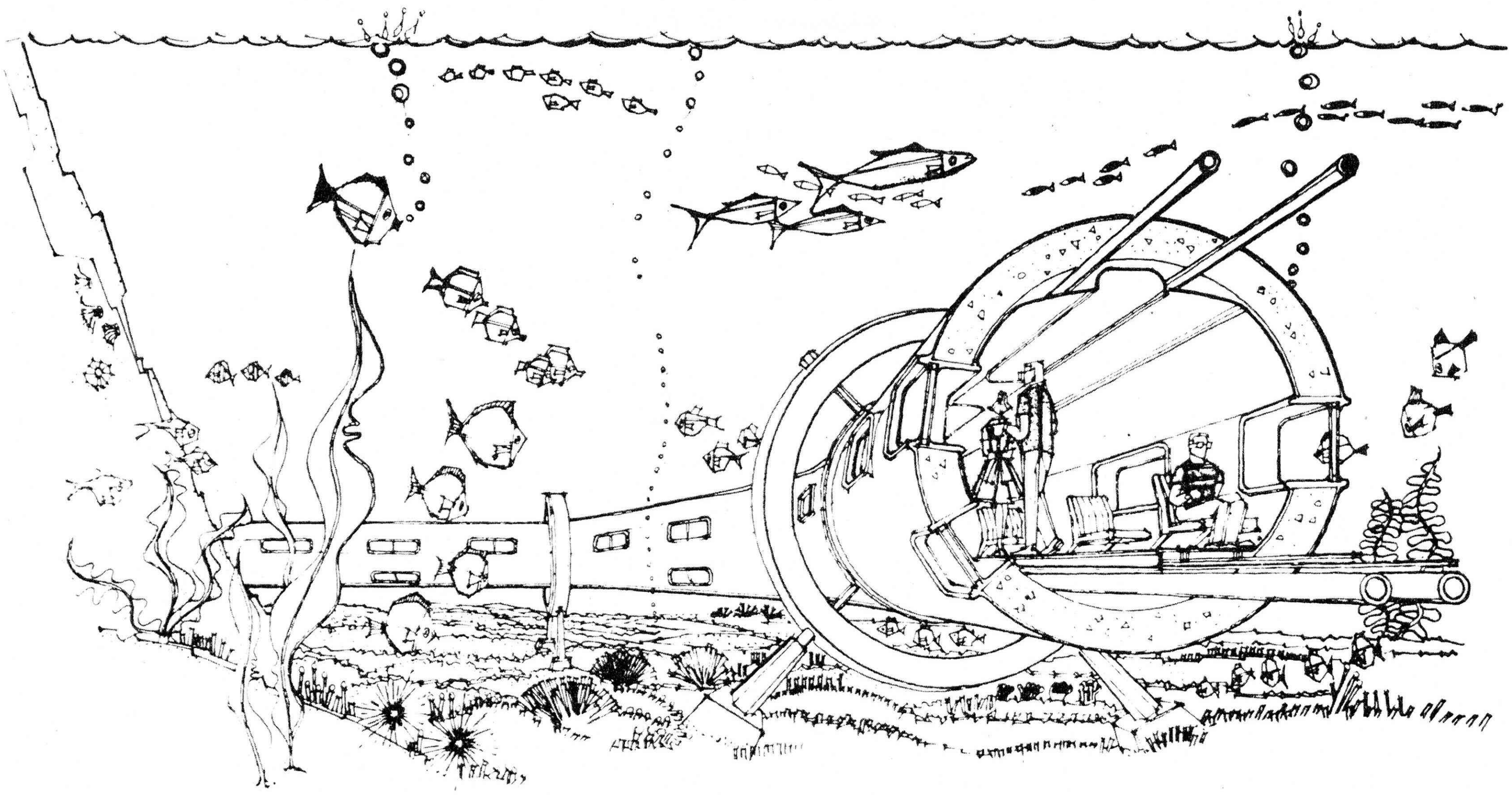
As a result of the surveys, the Ministry has decided to designate this summer as the following undersea parks: The sea of Uwa within the Ashizuri Quasi-National Park, Tatsukushi-Minokoshi and several other spots. These sites are located in a warm current area and abound in beautiful sub-tropical underwater scenery. In future the Ministry plans to designate two or three undersea parks each year.



As already mentioned the designation of an undersea park has two significant purposes—the preservation of natural underwater scenery and marine fauna and flora as well as to provide a place for the general public to view such scenery. The construction of safe facilities to view the submarine wonders is also most important. The most common facility used hitherto to view the underwater scenery was a glass-bottomed boat. But this method, according to scuba divers, does not provide a full and clear spectacle of the wonders of the deep. They say it is like viewing a pretty girl walking on the street from atop a tall building. In other words, the true beauty below the surface cannot be understood unless one goes down close to the scenery. However, not everyone can engage in scuba diving.

This problem, however, has been solved with the development of an undersea observation tower by Hitachi Zosen, one of Japan's major shipbuilding companies. This observation tower was ordered by a hotel owner in the Shirahama Hot Spring Resort town of Wakayama Prefecture, facing the Pacific Ocean. The observation tower is made of steel and is 16 meters high. It will be fixed to a rocky seabed some 90 meters off the coast at a depth of six meters. The sightseer will reach the tower by monorail and, after descending down to an observation chamber surrounded with glass windows from which he will be able to enjoy the underwater scenery.

"Hatampo" fishes school among seaweeds. Three meters below the surface, Misaki.



Visitors on the moving walkway in the underwater promenade will enjoy the real charm of the underwater scenery through windows.

The chamber, of course, is fully ventilated and air-conditioned. Since this tower will be opened to the public sometime within this year, it will not be long before tourists in every-day clothes will be able to enjoy the marvelous sights of the deep. Hitachi Zosen has reported to have received a substantial number of inquiries about its undersea observation tower and if business negotiations prove successful, there is not doubt that a great many of these towers will be installed in various parts of the country.

Meanwhile, the Taisei Construction Co., is now working on a plan to develop an "underwater promenade" which will enable a sightseer to take a stroll 20 meters below the sea and observe marine life around him at first hand. The outer diameter of the cylindrical promenade will be eight meters. Tubes ranging from ten to 20 meters long will be welded together to form a tunnel-like walkway 300 to 400 meters in length on the bed of the sea at a maximum depth of 20 meters. The walls of the huge cylinder will be made of concrete and covered with steel plates. These walls will be 70 centimeters thick and studded in various places with double-glass windows while the interior of the tube will be fully ventilated.

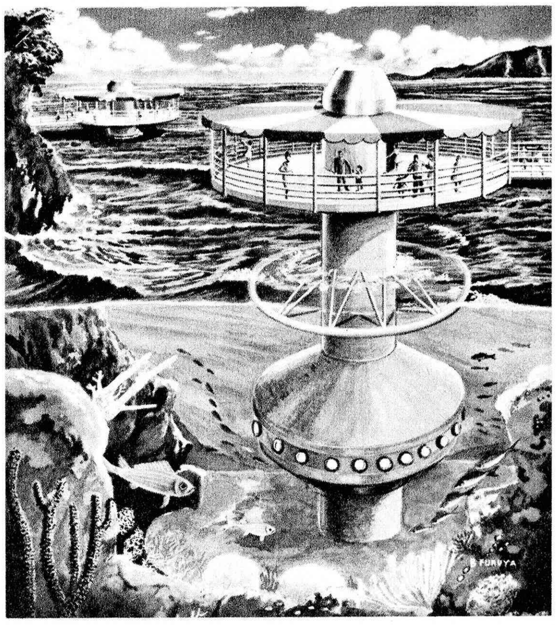
Taisei Construction Co. developed an "underwater development research apparatus" in August last year whcih is being used to observe undersea and seabed conditions. The steel device is made of a cylindrical observation chamber capable of accommodating 15 persons and submerging to a depth of 10 meters, as well as a pontoon or floating box.

Conditions in the observation chamber are exactly the same as those in a modern laboratory on land, affording the persons working in the chamber an ideal environment. Two glass windows measuring 40 by 50 centimeters have been built into the chamber in front of each seat. With the advent of this apparatus, surveys and observations of underwater and seabed conditions can be conducted as easily as in a laboratory on land. The device also makes it possible for persons in the underwater tourism business to survey and see with their own eyes, sites suitable for the installation of undersea observation towers and underwater restaurants. For according to the Taisei Construction Co., it is possible to enlarge this device and after carrying out some renovations, use it as an underwater restaurant.

Meanwhile, the Marine Park Center of Japan, which had been engaged in scientific studies of sites suitable as undersea parks, has launched an ambitious plan for the creation of a large underwater park off the Sabiura Coast near the town of Kushimoto, Wakayama Prefecture. The proposed park will be complete with underwater observation towers, glass-bottomed boats and other facilities as well as an aquarium and a tide-water pool. Construction of the undersea park is only in a preliminary state at present, but when completed, it will become a model for all other marine parks to follow.

The Marine Park Center envisages the completion of an undersea observation tower by the time the World Exposition opens in Osaka in March next year to provide the thousands of foreign visitors expected to attend the fair, an opportunity to enjoy the wonderful sights beneath the seas surrounding this island country.

Japan is thus pushing forward various projects for the development of its so-called "underwater tourist trade" by constructing undersea parks equipped with related sightseeing facilities. So it will not be long before everyone will be able to go down into the sea and view its wonders, hitherto enjoyed only by divers.



Underwater park with observation towers.

THE SEA MAKES A MAN

JAPANESE YOUTHS YEARN FOR THE SEVEN SEAS

Most young Japanese born in a typical maritime nation are supposed to dream at least once of sailing out into the vast expanse of waters as a seaman, since the charm of the sea and ships is eternal and boundless. The cadets studying at mercantile marine universities and colleges are determined to make this dream come true without it ending as a mere boyish dream.

Japan has two maritime universities—the Tokyo and Kobe Universities of Mercantile Marine—and five colleges—all operated by the state—for the express purpose of training seamen for the merchant service. Cadets of the 4½-year course of the mercantile marine universities are chosen through examinations from among applicants, who have finished senior high school. On the other hand, junior high school graduates are qualified to apply for admission to the 5½-year course of the mercantile marine colleges. However, entrance examinations are very difficult, and competition is tough.

Every year, the nation's seafaring population increases with 320 graduates from mercantile marine universities (160 from the navigation and as many from the engineering courses) as well as 400 graduates from mercantile marine colleges (200 from the navigation and as many from the engineering courses). Therefore, the graduates of these schools from one of the mainstays of Japan's shipping industry, and it is the cadets studying at these schools who will promote the industry of tomorrow.

Probably the most important and most delightful experiences for the cadets of the mercantile marine universities and colleges is a voyage in a training ship. All cadets at both the universities and colleges must serve in training ships for one year in the navigation and nine months in the engineering courses.

At present, there are seven training ships—the Nippon Maru, the Kaiwo Maru, the Hokuto Maru, the Taisei Maru, the Ginga Maru, the Shintoku Maru and the Seiun Maru. The Nippon Maru and the Kaiwo Maru are sailing vessels. All of these belong to the Institute for Sea Training of the Ministry of Transport, and cadets are assigned to various ships according to their training requirements, but their last training voyage is made aboard a sailing vessel. Until graduation, cadets under-

Photos by MICHIO NOGUCHI



The cadets of the Kaiwo Maru line up at a ceremony prior to the departure on a long cruise. Their earnest looks reflect a firm determination to shoulder the future of their seafaring nation. After the cruise aboard the sail training ship, they graduate from mercantile marine schools and become full-fledged seamen. The 2,284-gross-ton Kaiwo Maru, built in 1930, can accommodate 112 cadets. The sailing ship is said most suitable for training in basic navigation techniques and preparing cadets mentally as seamen.





Training in the use of the gyrocompass.

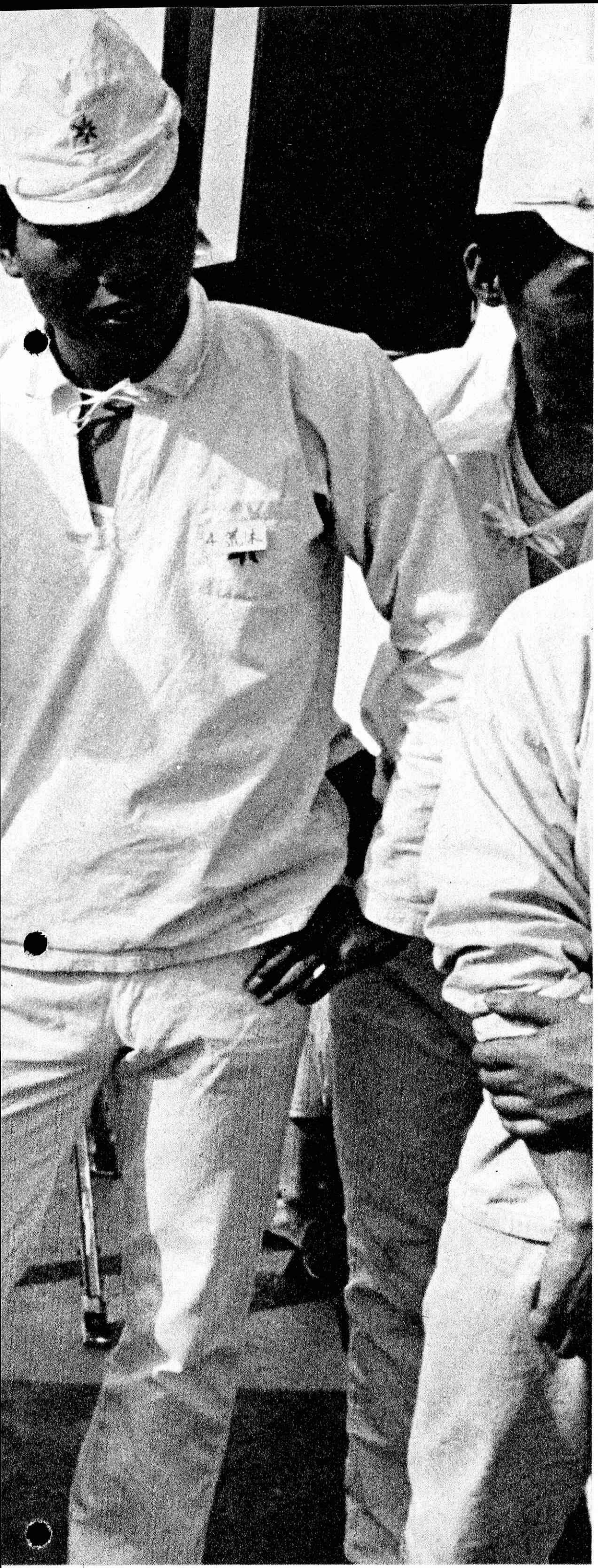


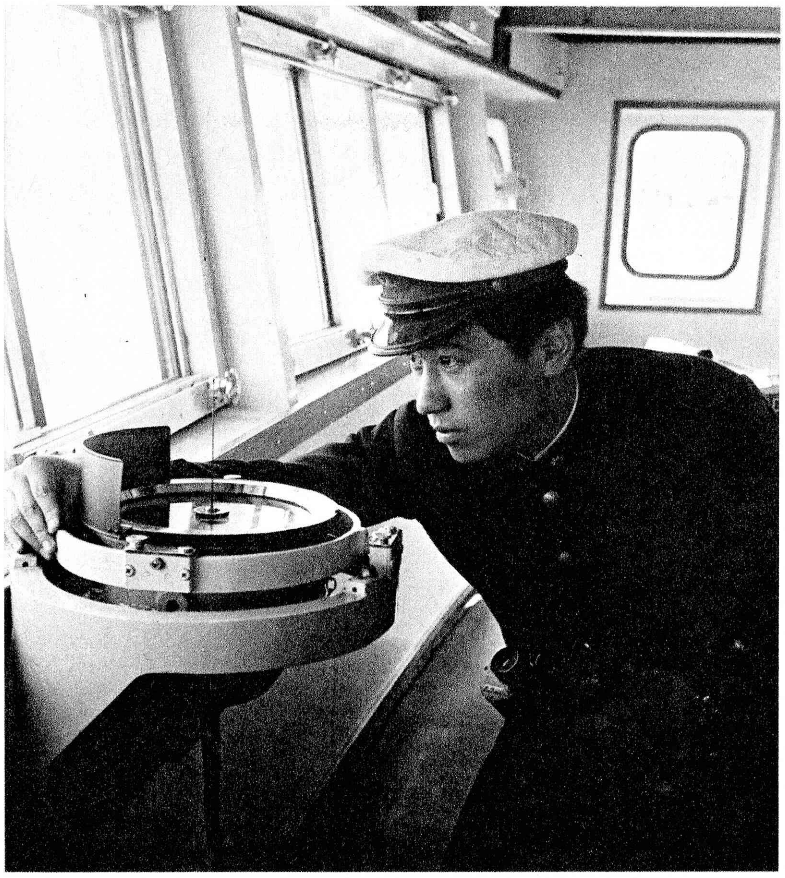
Cadets undergo navigation training on the main bridge of the Seiun Maru.

go practical training aboard varied types of ships ranging from highly mechanized vessel to sailing ships.

Each training ship makes one or two long cruises every year, and the main destinations are the West Coast of the United States, the Pacific coast of Canada, Hawaii, Australia, New Zealand, Southeast Asian nations and the Pacific islands. Sometimes, an extended voyage is made as far as New York by way of the Panama Canal. This year, the Seiun Maru, the most advanced training ship in the world equipped even with a computer, made a round-the-world training voyage with 150 cadets aboard for the first time since the end of the war.

Japan's economic development is unthinkable without marine transport. For as an island country short of natural resources, all industries must rely on marine transportation. During World War II, Japan's shipping industry suffered a devastating blow. But its mer-





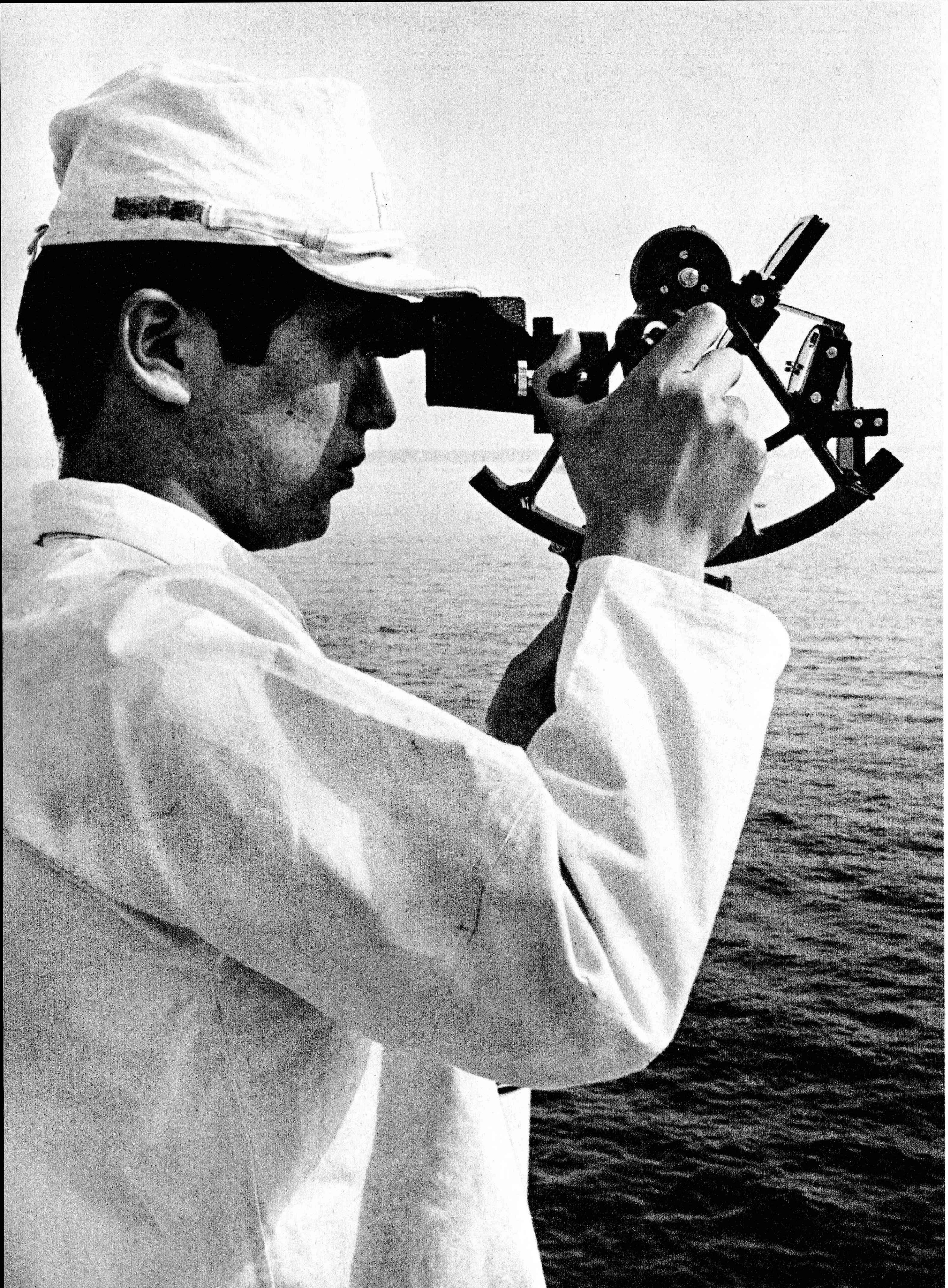
Left: A cadet of the Seiun Maru confirms the course of other ship with a repeater compass. Below: Cadets of the engineering course of the Seiun Maru undergo training in the control room for the main engine. This vessel is characterized by adequate facilities and equipments to enable cadets to acquire the ability to meet the maritime technological innovations.

cantile marine has now reached 20 million tons, fifth largest in the world. Moreover, an ambitious program has commenced to double the nation's merchant fleet by building 20,500,000 tons in six years from fiscal 1969 to 1974. Meanwhile, the technological innovations in ships is making constant headway with vessels of new types emerging one after another, such as 300,000-ton tankers, containers and computerized ships.

In these circumstances, merchant seamen equipped with new techniques and knowledge are in increasing demand. Therefore, growing expectations are placed by the nation's shipping industry in the cadets of the mercantile marine universities and colleges, who love the sea and ship are studying hard to shoulder Japan's marine transport of tomorrow.

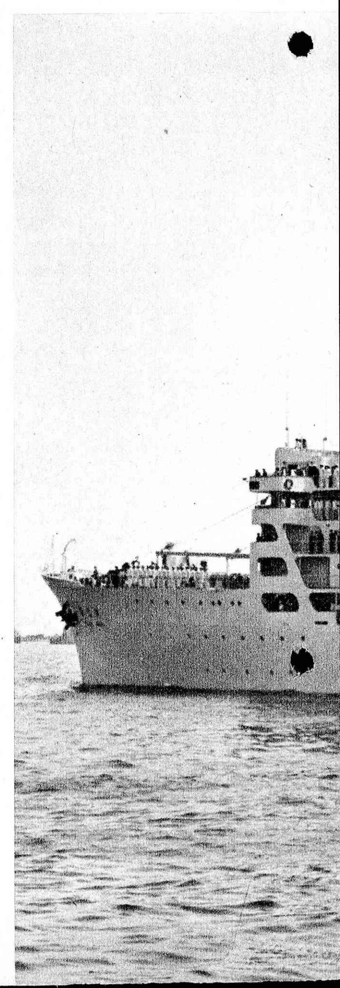
Here is a firsthand look at the cadets' training aboard two training ships—the sailing ship Kwaio Maru and the most advanced Seiun Maru.





Shooting the sun with sextant
to determine the ship's position.

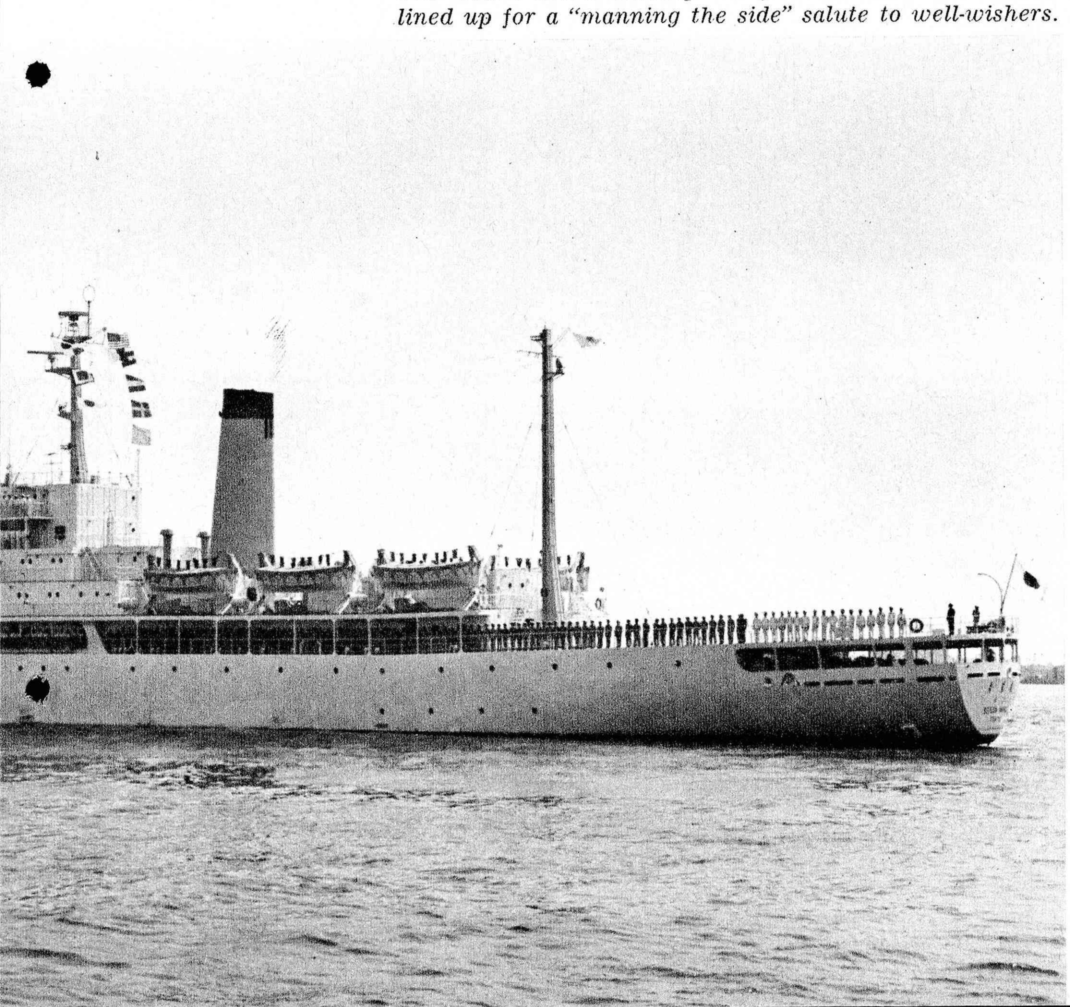






Cadets of the Seiun Maru start each day by washing down.

The Seiun Maru leaving Tokyo Port with the cadets lined up for a "manning the side" salute to well-wishers.





The cadets of the Kaiwo Maru man the yards for a farewell salute, already imagining the foreign ports they will visit and burning with hope for the future.



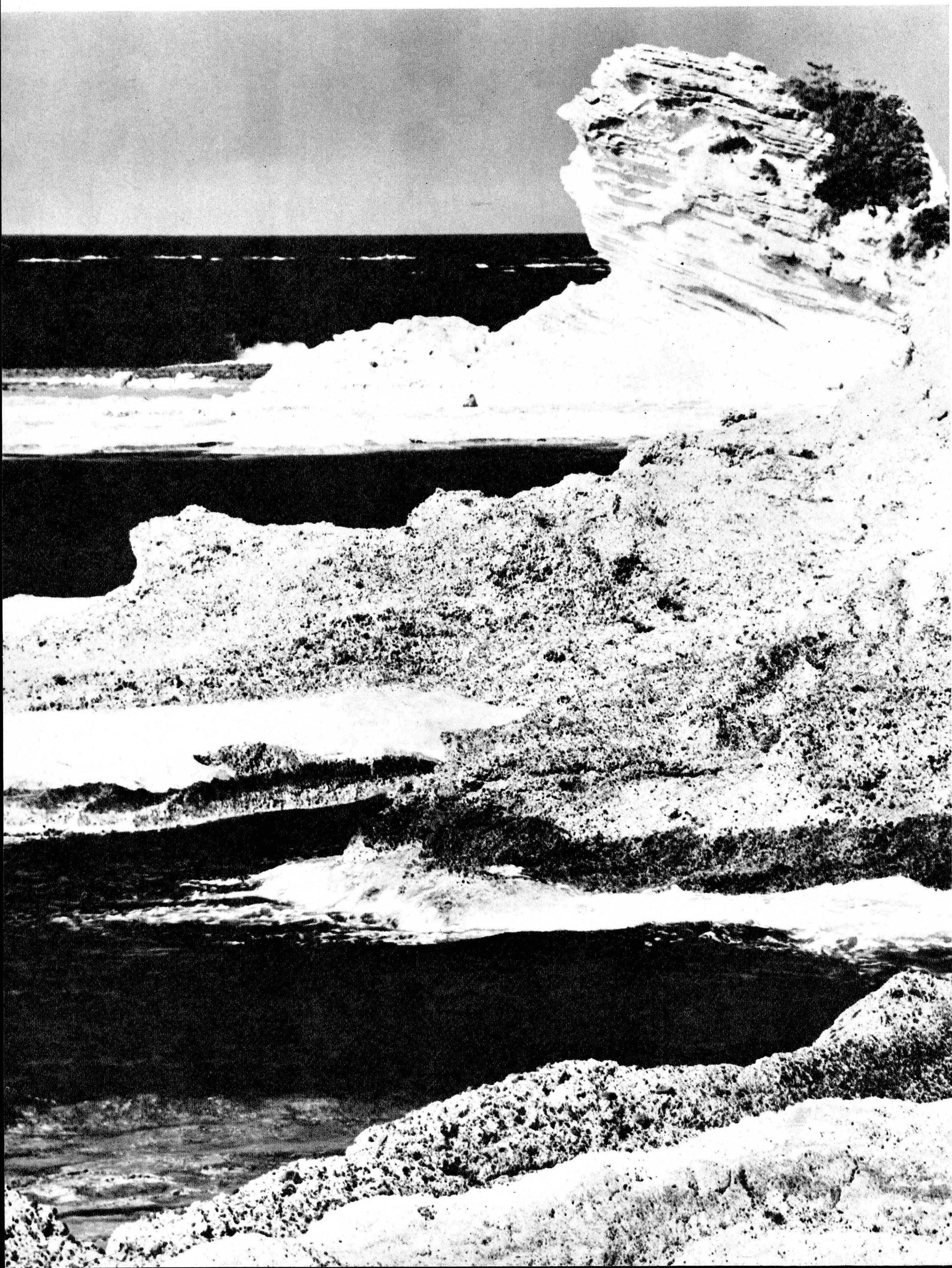
The Kaiwo Maru cruises the Pacific Ocean with all sails drawing. Even if advancing science solves the mysteries of the sea, it will in no way detract the charm of the sea and the ship. (Photograph by the Institute for Sea Training)

JAPAN'S SEASCAPES

HARMONY, VARIATION AND DELICATE BEAUTY

Photos by YOICHI MIDORIKAWA

Much of the finest scenery of Japan, a country surrounded by the seas, is connected with the sea and sea shores, and Japan's seascapes are really an inexhaustible well of beauty. Let us enjoy the fantastic seascapes of Japan by the works of Yoichi Midorikawa, a leading photographer of natural scenes.

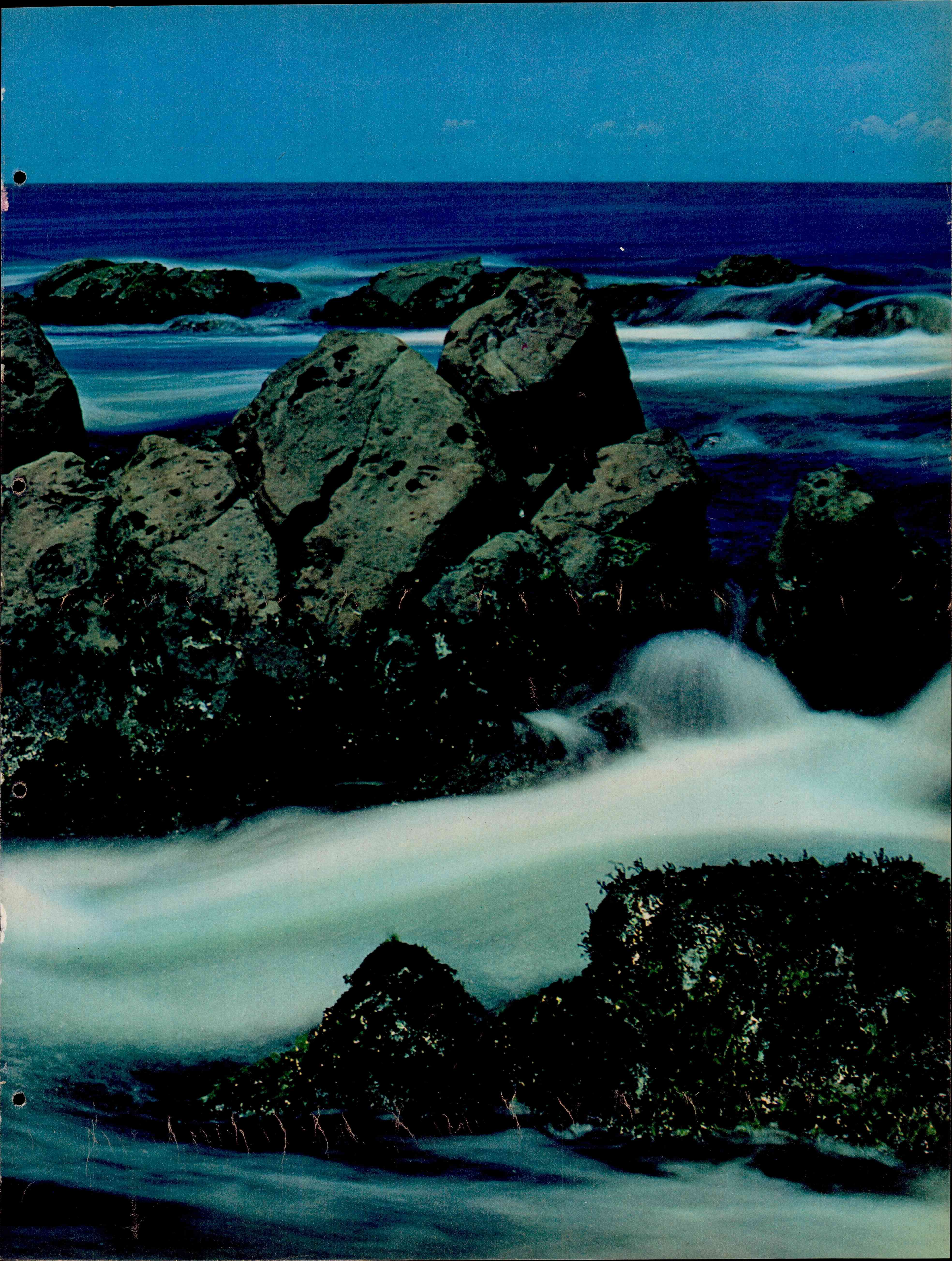


Left: Nie Coast of the Noto Peninsula facing the Japan Sea. Right: The Seto Inland Sea.





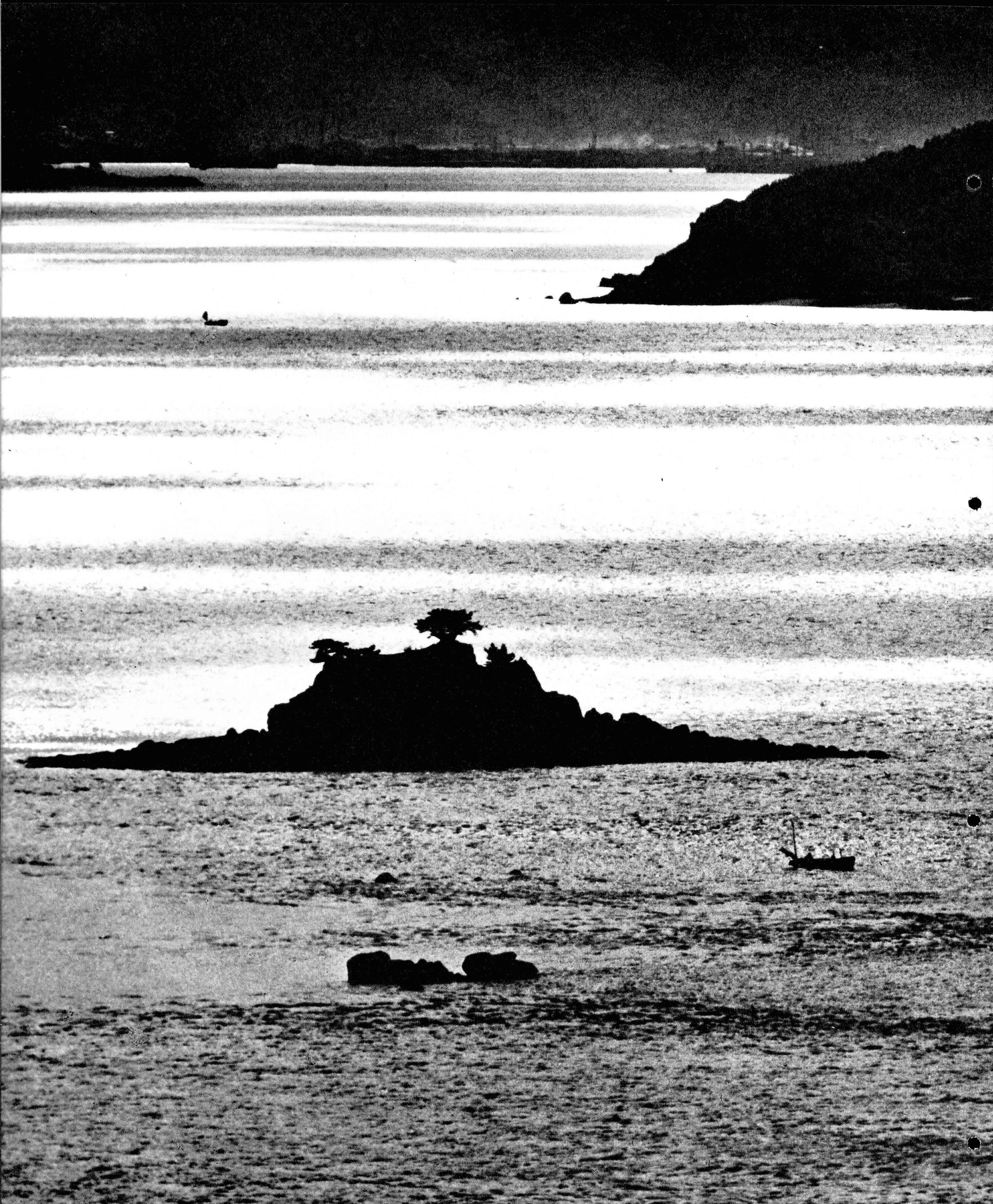
Naruto Strait connecting the Pacific Ocean with the Inland Sea.

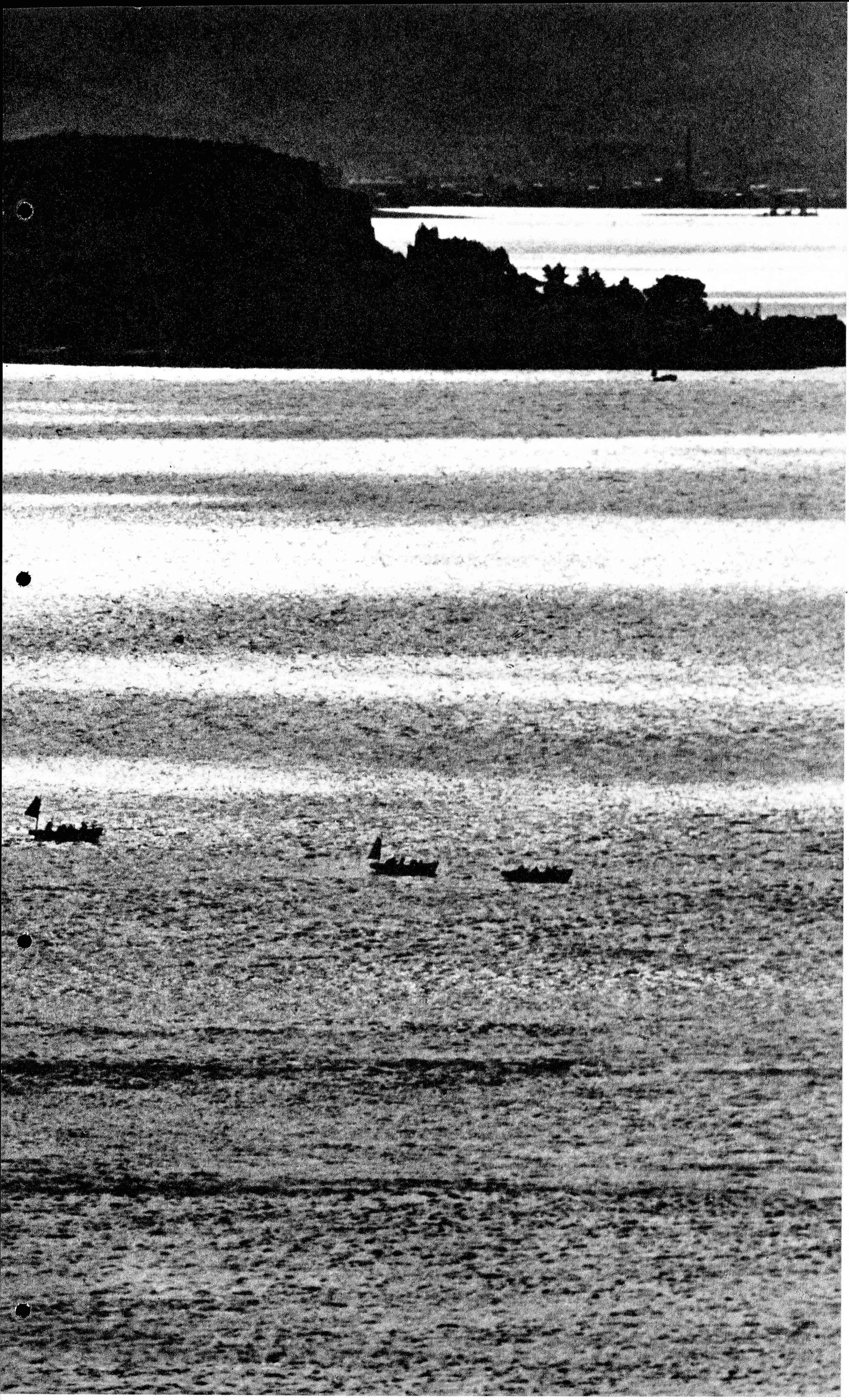






The coastal sceneries of Goto Islands.





The Seto Inland Sea seen from Washuzan Hill, Okayama Prefecture. With numerous islands of various shapes and sizes covered with picturesque pine-trees, it is typically Japanese. The richly variegated scenery of the coast is made more interesting by many small fishing ports.

EMPEROR HIROHITO; THE BIOLOGIST

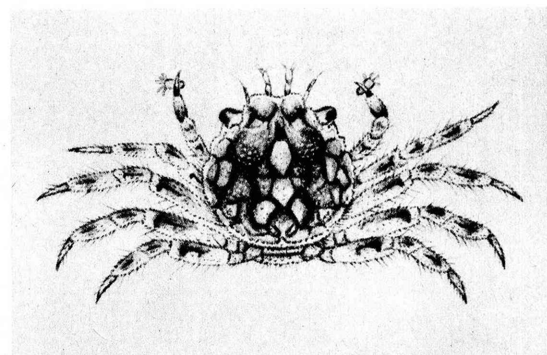
Text by Dr. TSUNE SAKAI

The Empress fully understand the Emperor's research and is a ready cooperator.



AMONG the various types of shrimps in Japanese waters, there is a very rare species with the scientific name of *Sympasiphea imperialis* (Japanese name: *Shojo-ebi*). This shrimp lives at the dark bottom of the deep sea, but the color of its body is flaming red with a beautiful luster. It was in 1918 that this shrimp was recorded academically for the first time. That is, when Emperor Hirohito, then the young Crown Prince, was staying at the Imperial villa at Numazu southwest of Tokyo, and picked up a creature of this species, which had been washed ashore after a storm. This shrimp is still preserved as a type specimen at a biological laboratory in the compound of the Imperial Palace. It is a very rare species, and only one or two have thus far been discovered besides that found by the Emperor.

In Sagami Bay also southwest of Tokyo, there is a peculiar jellyfish called *Koto-kurage*, which is well known in world academic circles. Academically named *Lyrocteis imperatoris*, it has a beautiful harp-shaped body with pink and yellow spots. And the discoverer of this speci s was also the present Emperor of Japan.



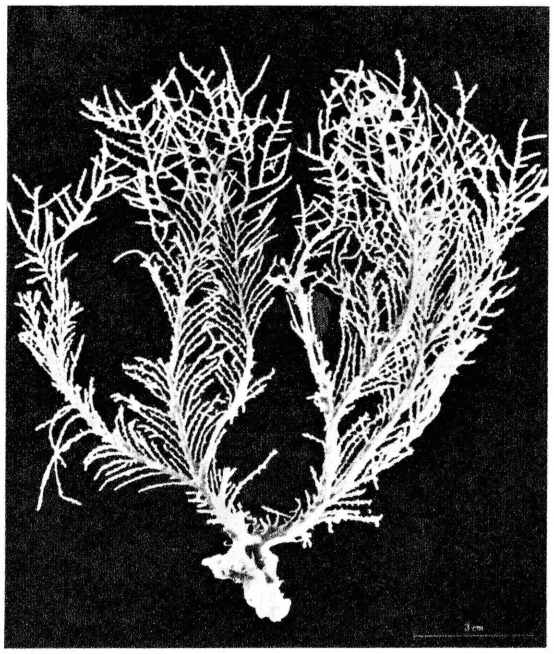
"Lybia hatagumoana Sakai," a kind of boxer-crab. This is one of new species of sea creature discovered by Emperor Hirohito.

It was in 1887 that a marine laboratory was established at Misaki at the mouth of Sagami Bay for the first time in Japan to study marine life. In those days, a strange lump of jelly-like substance, presumed to be a part of a sea creature, was found in Sagami Bay. Scholars conducted intensive studies but failed to establish its identity. Years later in 1942, the Emperor collected a complete specimen of this strange creature in the waters off Enoshima Island. It was thus found to be a unique type of jellyfish belonging to *Kushi-kurage* (scientific name: *Ctenophora*).

The discovery of rare sea creatures, such as *Shojo-ebi* and *Koto-kurage*, came about before World War II when the Emperor was still young. But his particular interest in biology was known from his boyhood. Specimens of insects (with bent wings!), made by him while at the Primary Department of the Gakushuin (Peers' School), are still preserved among the Emperor's collection of specimens. Before the war, however, His Majesty could spare only limited time for biological study.

After the war ended, however, he was able to devote at least two afternoons a week to his favorite biological studies. This was one of his principal delights. Each season, he spends several days at the Hayama Imperial Villa facing Sagami Bay to rest. But he devotes all his time at the villa to the research and study of marine life in Sagami Bay.

About an hour and half's drive from Tokyo, Sagami Bay is influenced by both a warm current from the tropical zone to the south and a cold one from the northern frigid zone.

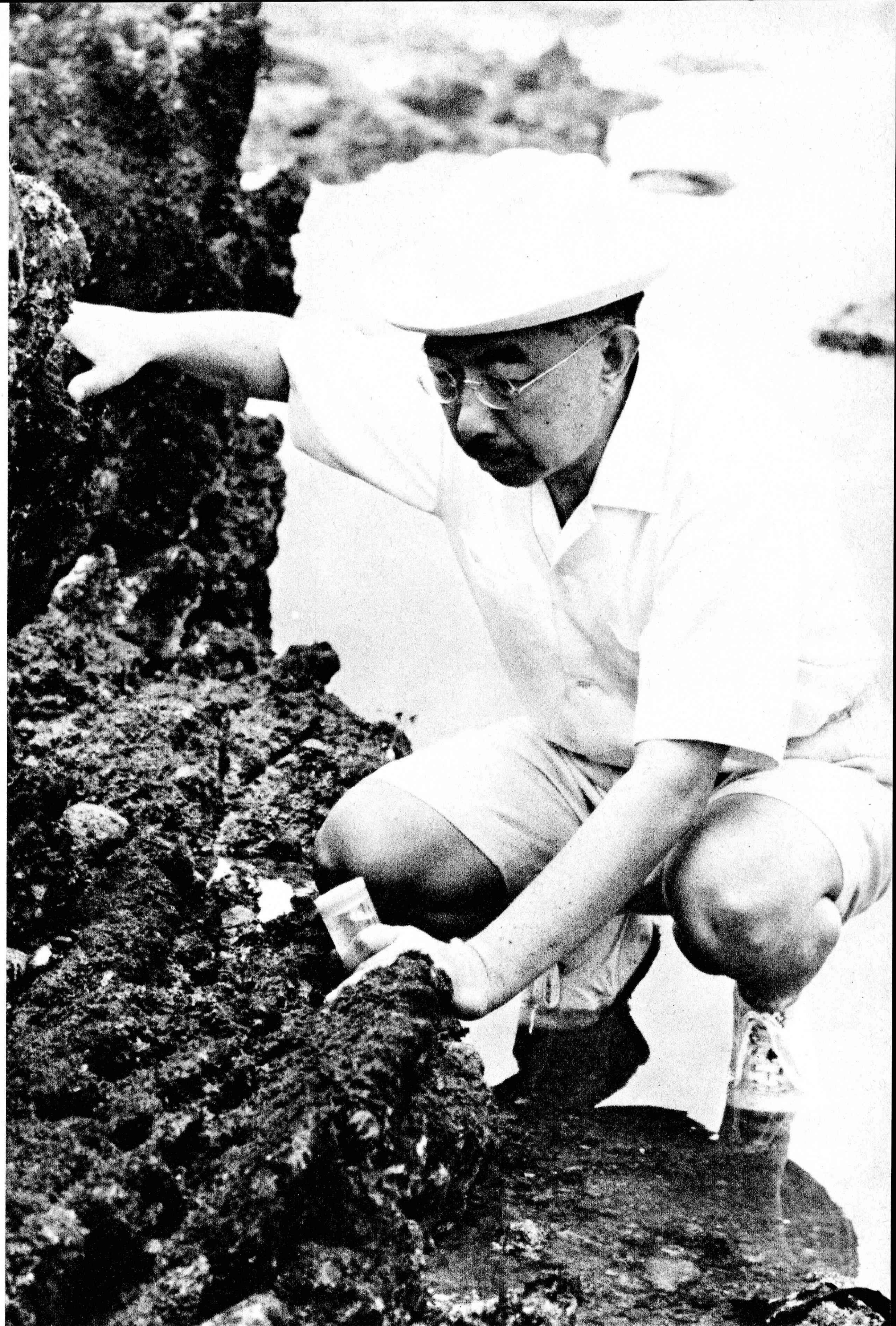


"Pseudoclathrozoon cryptolarioides Hirohito," a new species of Hydroid, discovered and described by His Majesty the Emperor.

Because of these two currents as well as endemic creatures, the bay is known as a treasure house of marine life.

While at the Hayama Imperial Villa, the Emperor is engrossed in biological research from 9 a.m. to the evening excepting when he has now and then to look over important documents, delivered by the Cabinet. Even in the dead of winter or in sweltering summer, His Majesty continues his intensive research and studies except when hindered by inclement weather. And this has lasted for more than 20 years. At low tide, he is so absorbed in collecting various creatures from fissures in the reefs and under stones that he does not mind being soiled by mud. At high tide, he goes out aboard the specimen-collecting ship Hatagumo to survey the creatures on the sea bed by means of trawl and dredge.

In particular, the Emperor has devised a very unique method for collecting animals from the bottom of the sea. Trawlnets and dredges, generally used for such surveys, are limited to muddy or sandy places and cannot be used where the sea bed is rocky. But the rocky places are most suitable for the collection of *Hydrozoa* in which the Emperor specializes. And so to overcome this difficulty, he has devised a very unique dredge. This consists of a thick chain, which is dragged along the sea bed, and buoys are placed on another



Emperor Hirohito collecting creatures on the beach near the Hayama Imperial Villa.

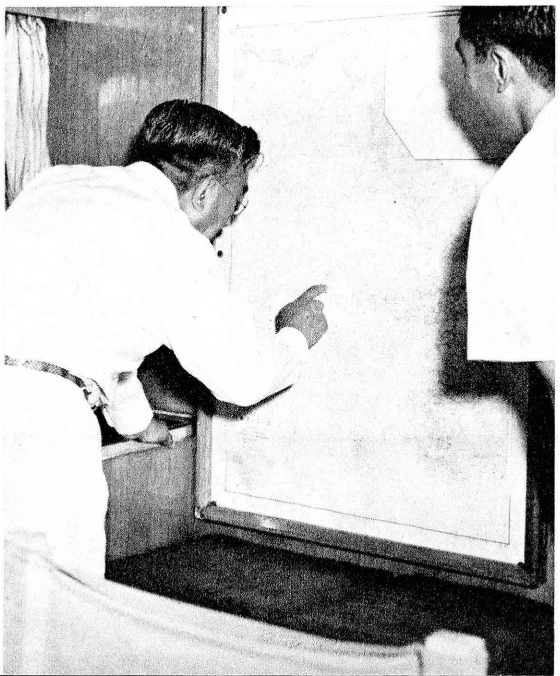
chain, which serves as the mouth of the dredge and behind which is attached a long net for collecting specimens.

SINCE the invention of the new dredge, the Emperor's study of the sea floor in Sagami Bay has produced remarkable results one after another. Especially many of the specimens collected from the rocky sea bed 80 to 100 meters deep off the Imperial villa are worthy of particular note from the viewpoint of both taxonomy and bio-geography. These specimens are preserved at the well-equipped laboratory in the compound of the Imperial Palace.

The true condition of sea creatures cannot be clarified by one or two surveys alone. What is most important is to survey the same place carefully over and over again. I wonder if any other part of the sea in the world has ever been probed so repeatedly over more than two decades as the Emperor's surveys in Sagami Bay?



The Emperor's specialty in biological study is *Hydroid* creatures, which belong to *Coelenterata* along with such others as coral, *Medusca* (jellyfish) and Sea anemone. They are very small and marked by a large variety, and the study of their life history has not yet made much progress. One of the reasons the Emperor has chosen this difficult subject is that he did not wish to trespass on the fields of professional scholars. Moreover, there was not a single scholar specializing in *Hydroid* animals in Japan. The difficult research on these creatures has made steady progress, and the Emperor has already published the following thesis: "Hirohito 1967: A Review of the Hydroids of the Family Clathronidae with Description of a New Genus and Species from Japan." I understand that His Majesty is to announce the second paper this autumn.



Various other specimens are found mixed in *Hydroid* animals collected by the Emperor. He carefully checks a wide range of these with keen interest and preserves the specimens at his laboratory.

However, as regards creatures other than *Hydroid* animals which are his specialty, the Emperor consults with scholars in respective fields and if necessary, lends specimens to them. This is true of foreign as well as Japanese scholars. Some western scholars have

The Emperor carefully studies a chart to fix the place for collecting specimens.



Left: The Emperor checks reference works at his biological laboratory in the compound of the Imperial Palace. Below: His Majesty takes personal command of the specimen collection aboard the research ship.



already announced their survey results on the basis of specimens supplied by the Emperor.

His Majesty's research results have been compiled by his laboratory staff and published in book form one after another. To date, he has published the following five works:

1949: Opistobranchia of Sagami Bay.
1953: Ascidians of Sagami Bay.
1955: Opistobranchia of Sagami Bay, Supplement.
1965: The Crabs of Sagami Bay.
1968: The Hydrocorals and Scleractinian Corals of Sagami Bay.

Among diverse specimens as mentioned in these books, as many as over 130 are academically certified new species, and all have been personally collected by the Emperor. If the creatures preserved at his laboratory which have not yet been announced are taken into account, the Emperor presumably has discovered upward of 200 new species to date. Now at the age of 68, he shows no slackening in his zeal for research, and is believed bound to make still further contributions to the world of biology.

Furthermore, the Emperor is also known for his earnest study of botany as well as zoology. And his book "Hirohito 1962: Flora Nasuensis" has endeared itself to many Japanese. One of the frontispieces in the book has been drawn by the Empress.

In August when beaches are crowded with swimmers, the Emperor makes it a practice to go to the Nasu Imperial Villa for a vacation every summer instead of to the Hayama Imperial Villa. The above-mentioned book represents the result of his botanical studies at Mt. Nasu over a period of two decades. And all of the publishing work from planning of the printing to proofreading was done personally by His Majesty.

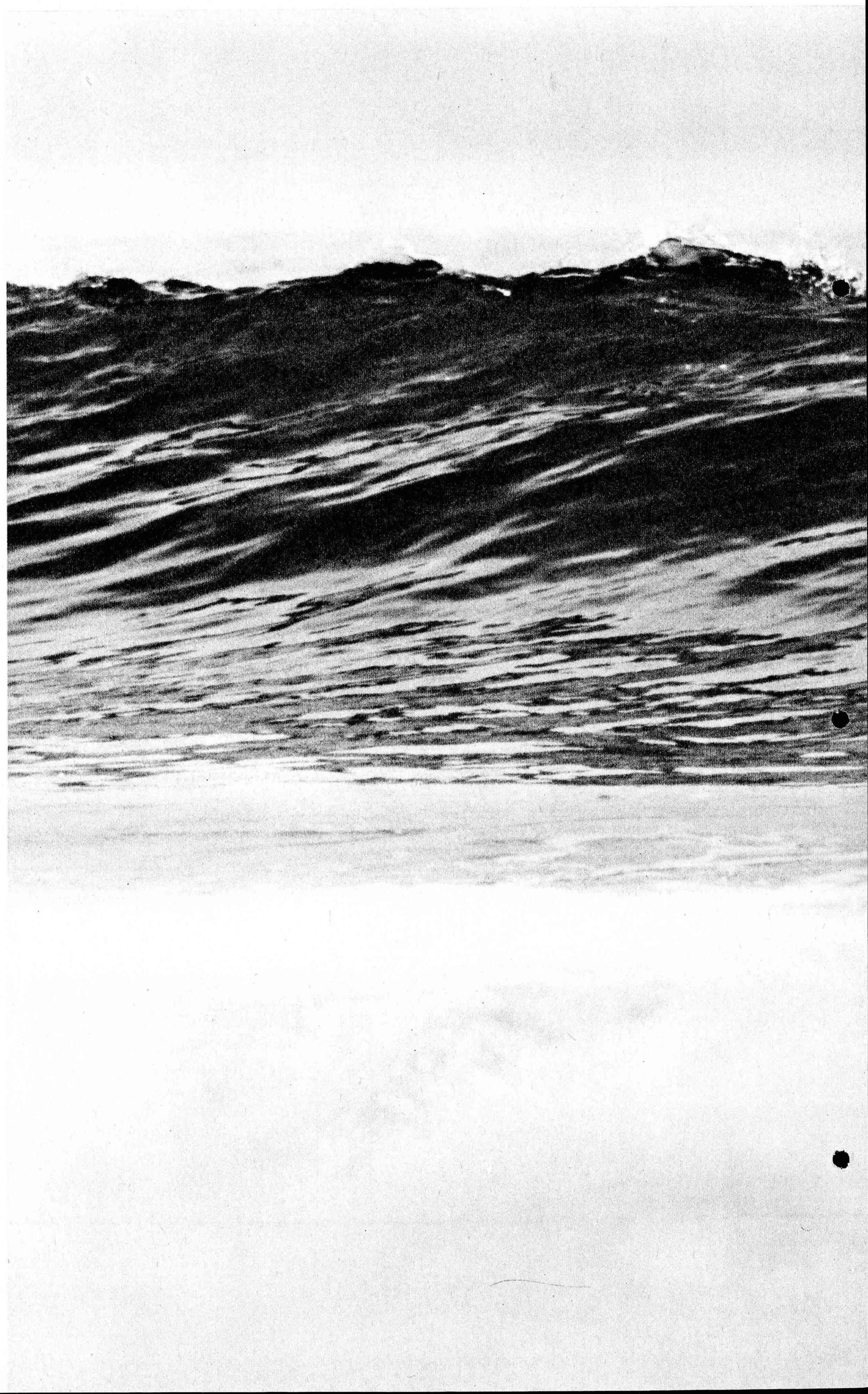
(The writer is president of the Carcinological Society of Japan and has served as adviser to the Emperor in his study of marine creatures for more than 20 years.)

SHONAN AND IZU
MECCA FOR SEA-STRUCK

The season of the sun arrives with the month of July and the Shonan and Izu Beaches suddenly start to bustle with activity. Yachting, surfing, motorboating, scuba diving, angling, swimming . . . all that makes summer enjoyable fills these beaches facing the Pacific Ocean. It



Youngsters enjoying surfing at Chigasaki Beach of the Shonan district. It is only less than five years since surfing came into vogue in Japan. But it is already one of the most popular summer sports.



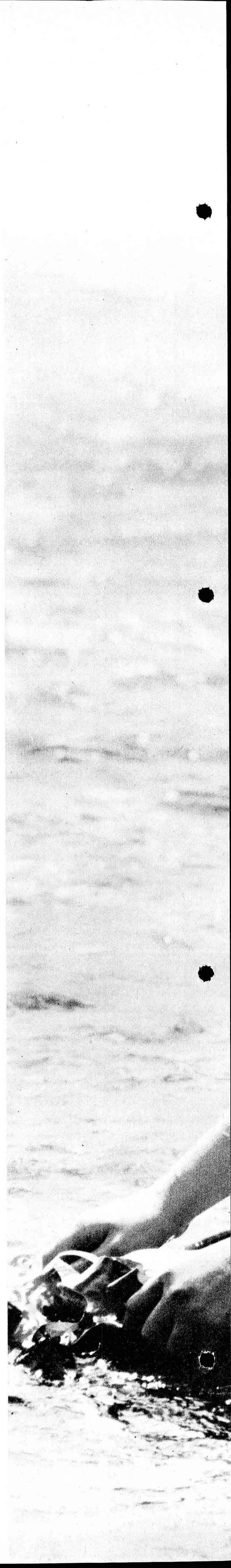
Photos by NOBUAKI FUKUI

BEACHES: YOUNG PEOPLE

is on the Shonan and Izu Beaches that new swimsuit fashions and new pastimes of the sea are born. In addition, the white spray of high waves breaking on rocky cliffs and sleepy fishing hamlets deep in inlets never fail to fill travelers' hearts with a warm, nostalgic sentiment.

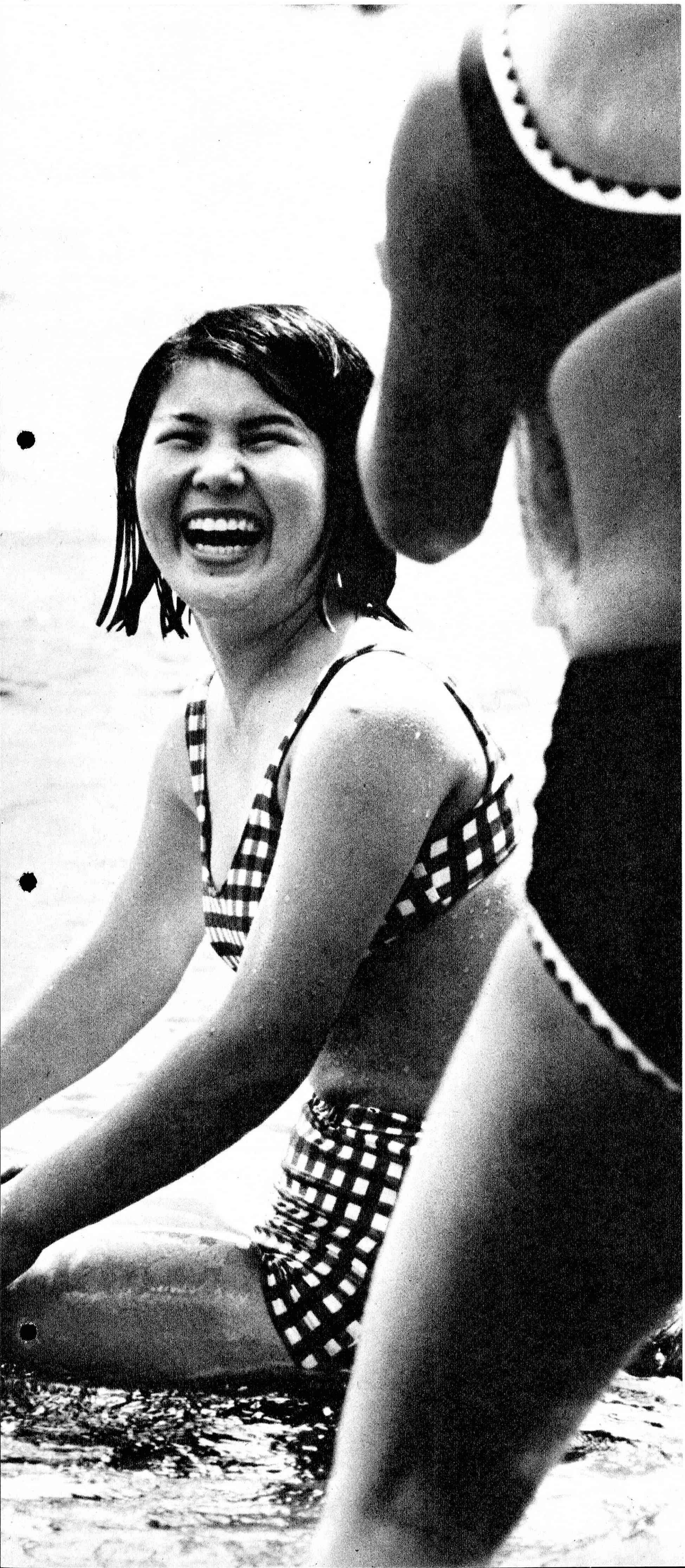






Toji Beach of Southern Izu, famed for immaculately clean water. The complicated topography of the sea bed here, rich in fauna and flora, is fit for scuba and skin diving.

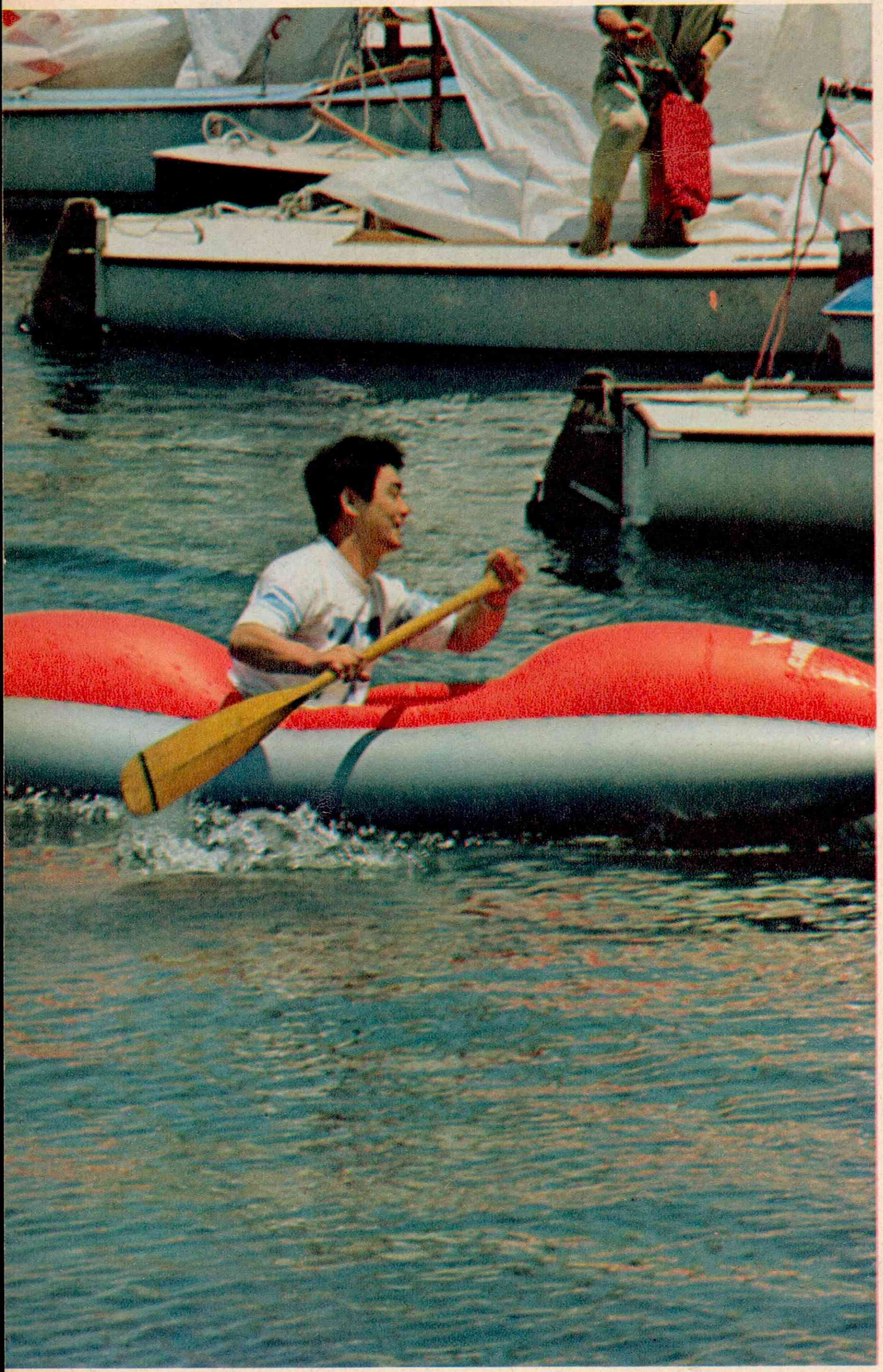
UNDER THE BROILING SUN, YOUNG PEOPLE FROLIC IN THE SEA.

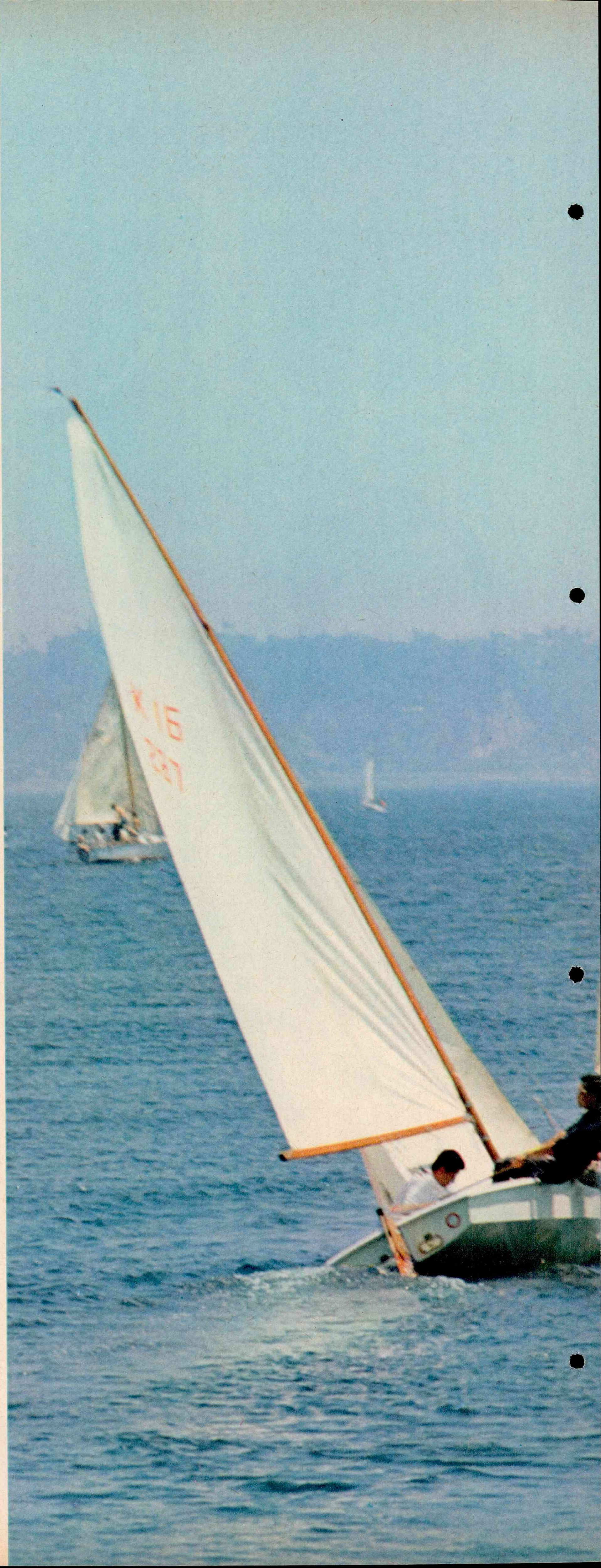


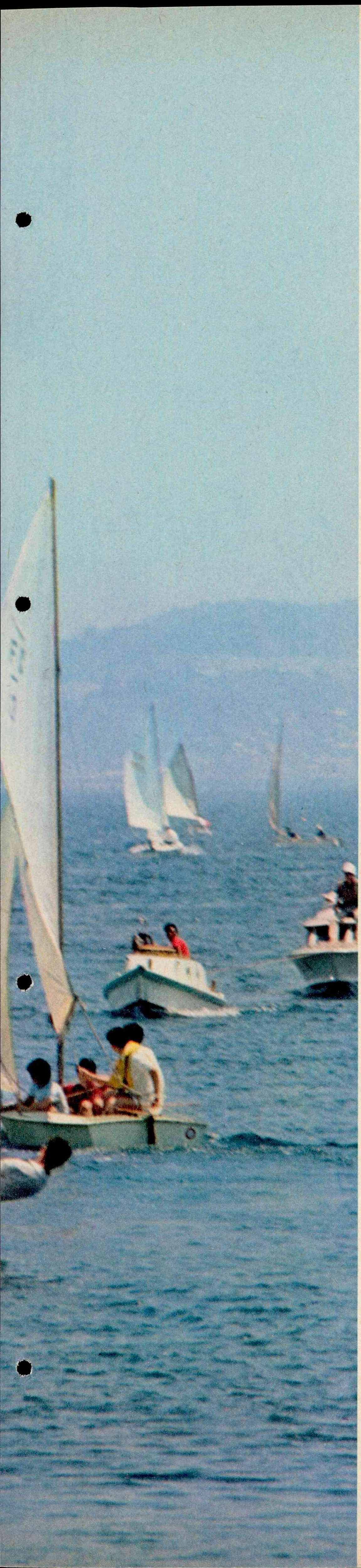


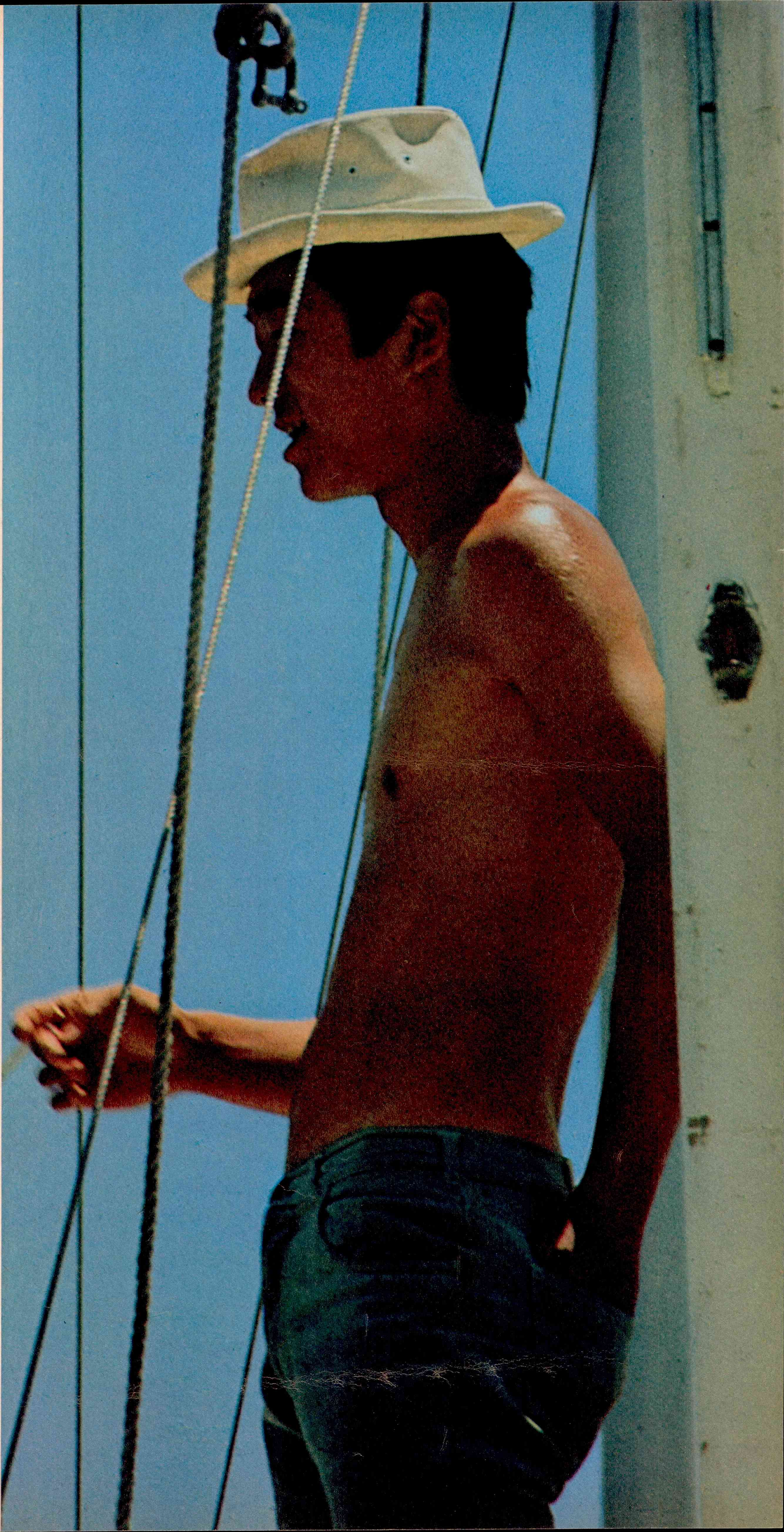
ALL THAT MAKES SUMMER ENJOYABLE
FILLS THE BEACHES.











Hayama-Enoshima district forms the center of the Shonan seaboard. Fully equipped with yacht harbor and other facilities for enjoying the sea, it may well be termed the "most luxurious beach" in Japan. Photos (including color pages) show scenes at Hayama and Enoshima.



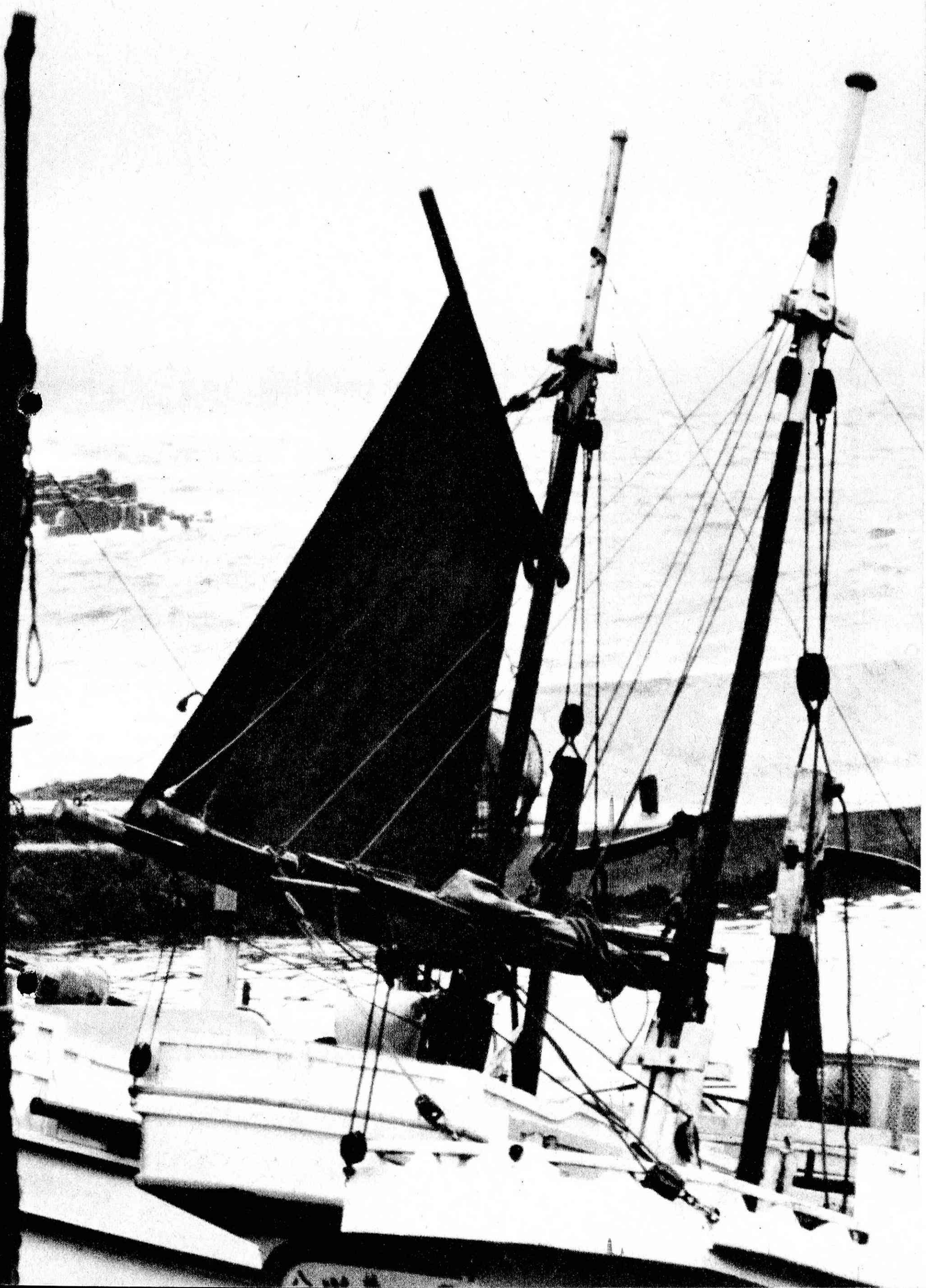


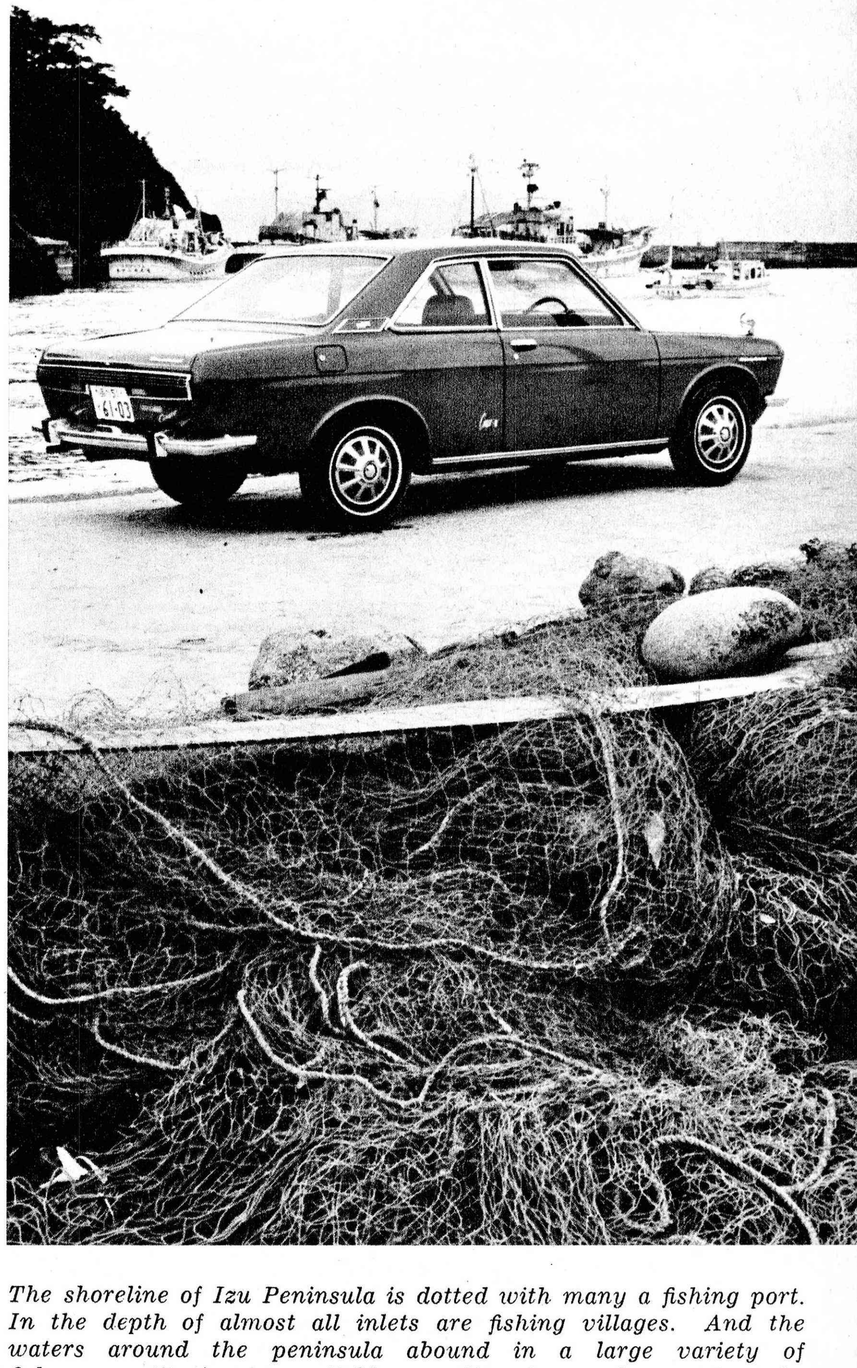

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DELICACIES OF THE SEA ARE WAITING AT THE HOTEL.

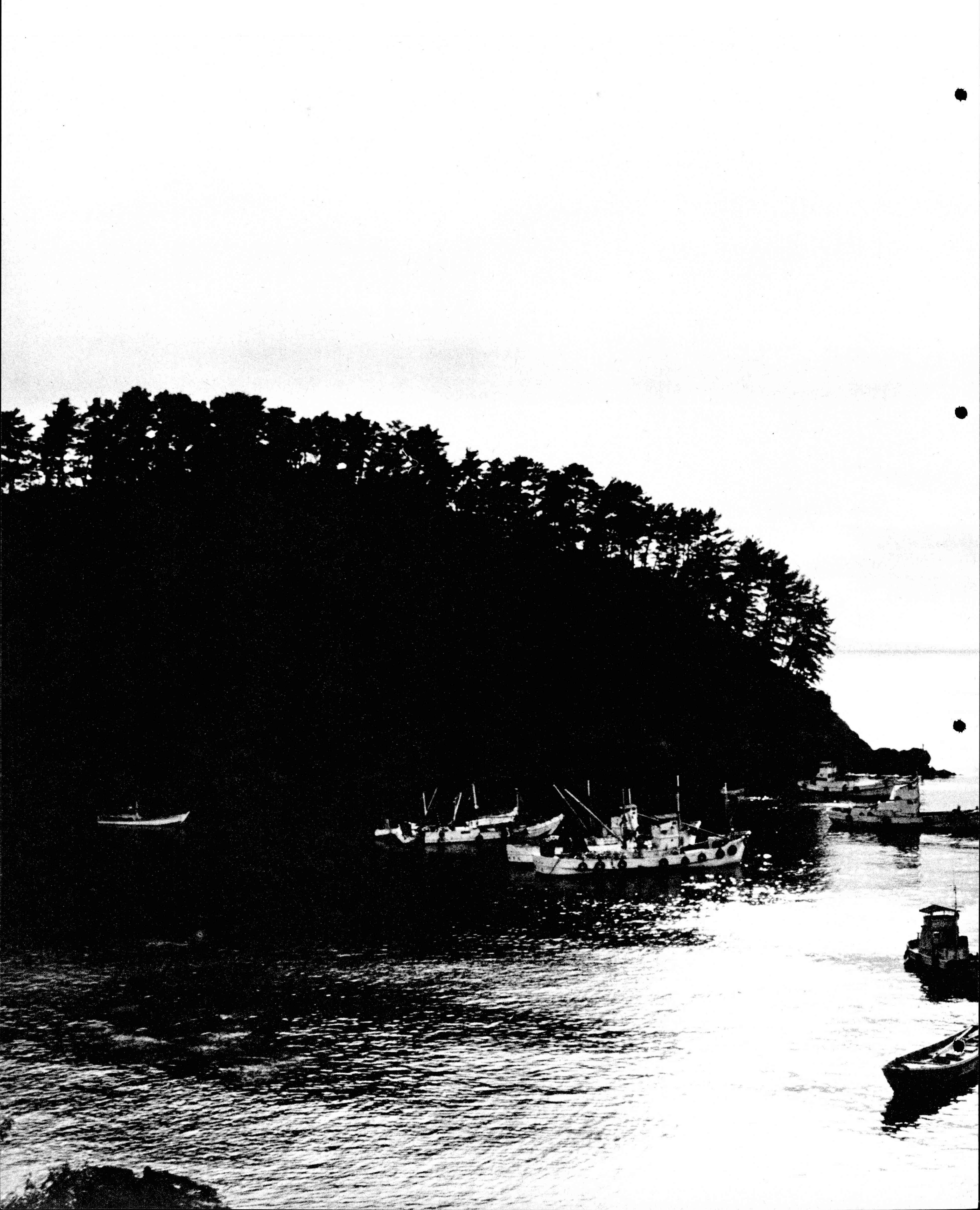


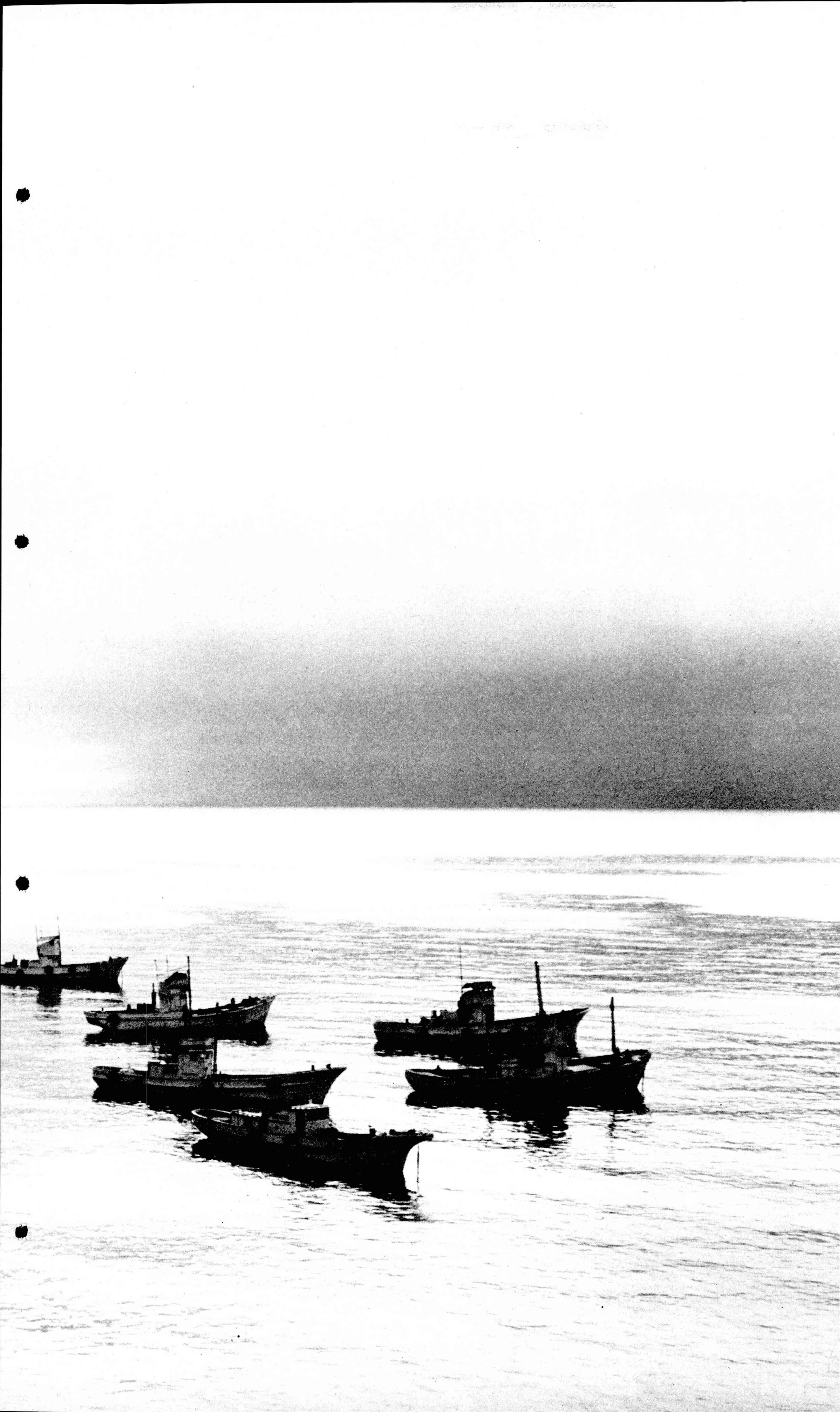




The shoreline of Izu Peninsula is dotted with many a fishing port. In the depth of almost all inlets are fishing villages. And the waters around the peninsula abound in a large variety of fishes, constituting a veritable paradise for anglers and scuba divers. The recent opening of the Tomei (Tokyo-Nagoya) Expressway has now made it possible to drive easily from Tokyo to such a rustic fishing port as you see in the photo.

A SLEEPY FISHING HAMLET IS IZU'S AGE-OLD TRANQUILIZER.





Fishing boats silhouetted against the setting sun present a fascinating sight that makes one forget about the fatigue of a day's drive.

This story was made with the cooperation of the Nissan Motor Co. (used car: Bluebird Coupe 1600 SSS, photo on page 51) and the Mitsubishi Heavy Industries Ltd. (Colt 1200 Custom, photo on page 49).

FESTIVALS OF THE SEA **PRAYERS FOR**



BIG HAUL AND SAFE NAVIGATION



JAPAN has innumerable time-honored festivals dating back for centuries—for instance, festivals of the sea, mountain, town, etc., which are held from season to season. It is estimated that there are 20 or even thirty thousand of these varieties and all are born of religious faith. That is, our forebears gave varied concrete shapes to their prayers in the form of festivals from generation to generation. Therefore, festivals represent, so to speak, a materialization of variegated fantasies in actual form. Moreover, none is a creation or production by a single genius. Festivals have been developed by people of various areas through their own wisdom and skill. These festivals stir a kind of nostaligc sentiment in our minds or impress us with the beauty of their form, the originality of their idea and the passion of these who take part in them. Introduced here are some of the many festivals of the sea—most of them symbolizing prayers for large catch of fish and safe navigation.



Morotabune Matsuri

This is a festival of the Miho Shrine in Shimane Prefecture on the Japan Sea, one of the oldest in Japan, and sacred to a deity widely worshiped as a protector of fishermen and seamen. It is held amid biting wind on 3 December every year. Two *morotabune* boats, shaped like ancient dugouts, are manned by nine men each, selected from local residents. (*Morotabune* means a ship rowed by many hands.) Clad in ancient costume, the men engage in a stirring rowing race. This festival which features ancient costumes and boats is considered important in folklore. (Photos by Fukushige Takebe)



Shiogama Port Festival *(Left)*

Shiogama Port in Matsushima Bay, noted for its beautiful scenery, is one of Japan's biggest fishing ports and occupies an important position in maritime trade. The port bustles with activity of many fishing boats from various parts of the country, unloading their hauls. The port festival, held on August 5 every year, features a parade of a gorgeously decorated ship with a portable shrine of the Shiogama Shrine aboard and large numbers of decorated fishing boats. The deity of the Shiogama Shrine is worshiped for what fishermen believe is his power to ensure safety of navigation, smooth land development, and easy childbirth. (Photo by Tatsuro Onisawa)

Tamatori Matsuri (Ball-Catching Festival) of Itsukushima Shrine *(Right)*

This is held at the Itsukushima Shrine in the Seto Inland Sea, well renowned as a shrine in the sea, every August. A platform with four pillars is set up in the sea and from this a square stand is hung, on which a sacred ball about 20 cm. in diameter is placed. With the sound of drum from the main section of the shrine as a signal, young men jump into the sea to start a struggle for the sacred ball watched by thousands of spectators crowding the beach and the shrine. First, the young men try to push the ball from the platform into the sea. They fight feverishly to reach the ball, some of them climbing onto the heads of others or trampling them into the sea. When the ball falls into the sea, then they start a mad scramble for it, and wrestling with each in the sea. The fight ends when the ball is brought to the specially erected *chushinjo* (reporting place). Prizes are awarded these who pushed the ball into the sea and brought it to *chushinjo*. This festival is more than 400 years old. (Photo by Shozo Tanaka)

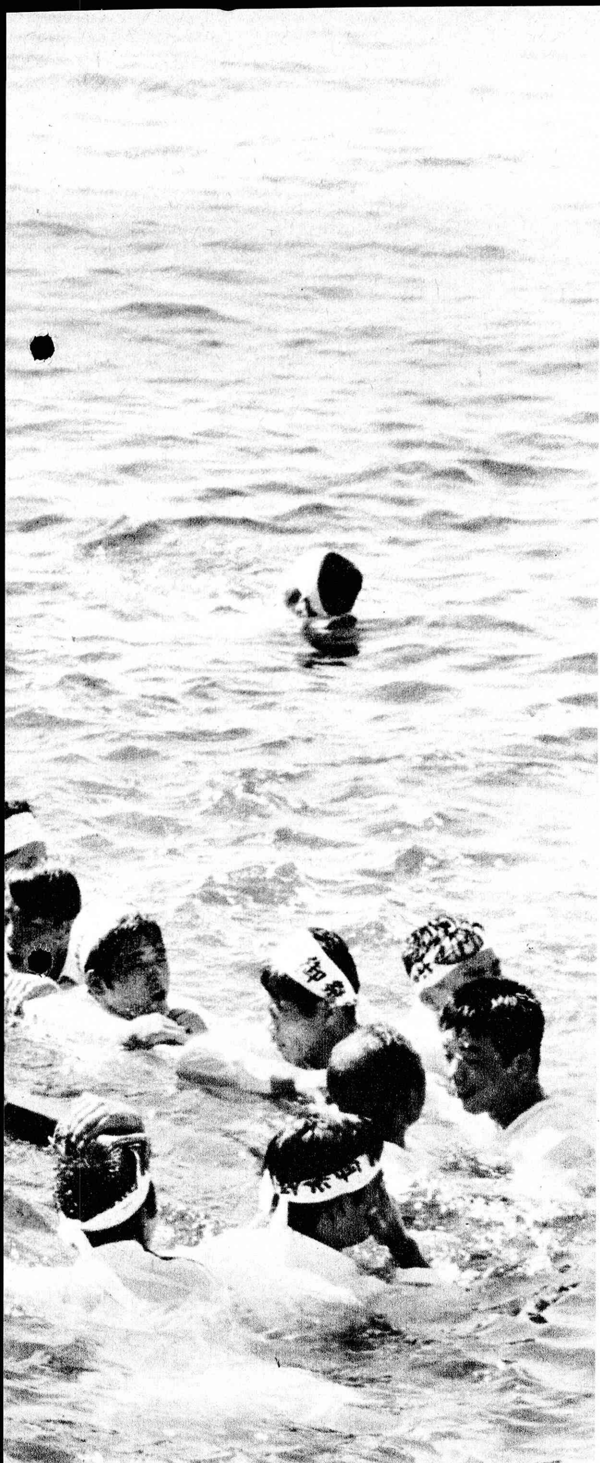




Tairyo Matsuri (Big Haul Festival) of Toyohama

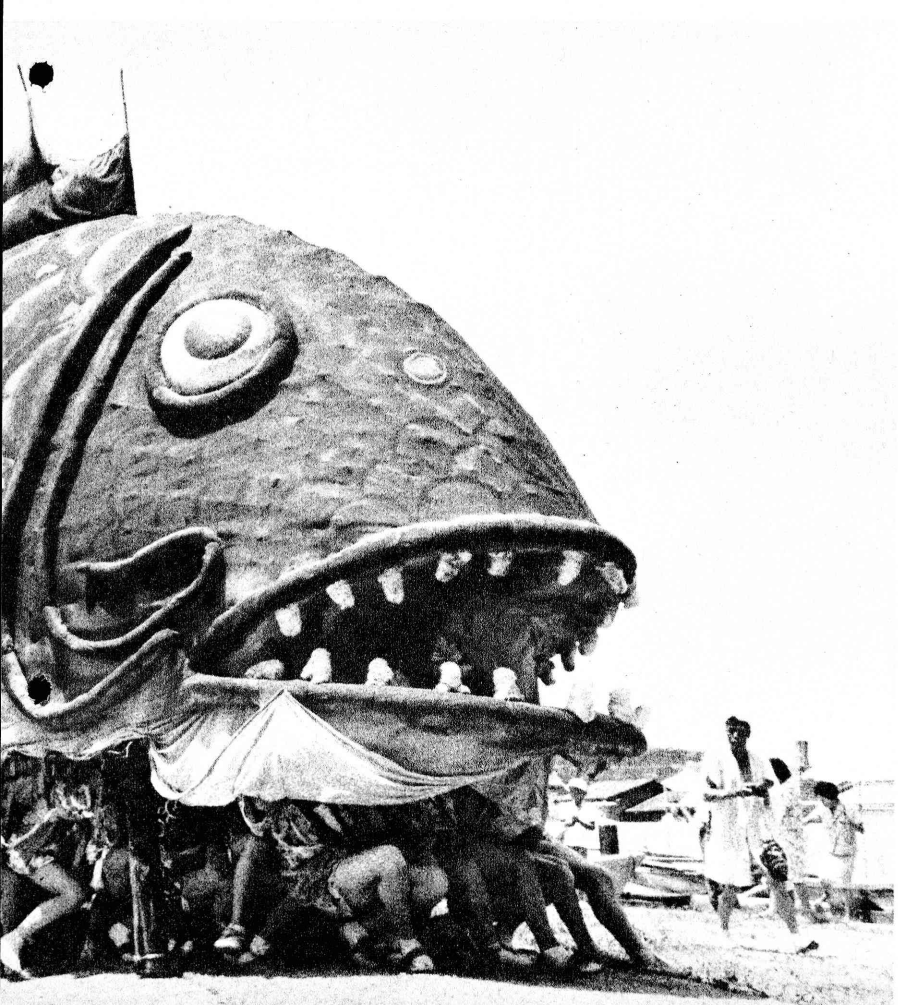
This is not an ancient festival. It is, so to speak, a gorgeous show at the height of summer. Toyohama is a fishing port on the Chita Peninsula jutting out into the Bay of Ise and a base for pelagic fishing. In 1905, the fishermen of the port enjoyed an unprecedentedly big catch and began the Tairyo Matsuri as a gesture of gratitude to the gods. It is a really animated festival giving vent to the tremendous vigor of fishermen. A giant red cloth-covered replica of a sea bream, weighing more than one ton, is shouldered by about 200 young men, who boisterously march around the beach and in the sea. This festival is held in July every year in the sweltering heat. (Photo by Fumio Kinoshita)





Mikoshi (Portable Shrine) Crossing the Sea

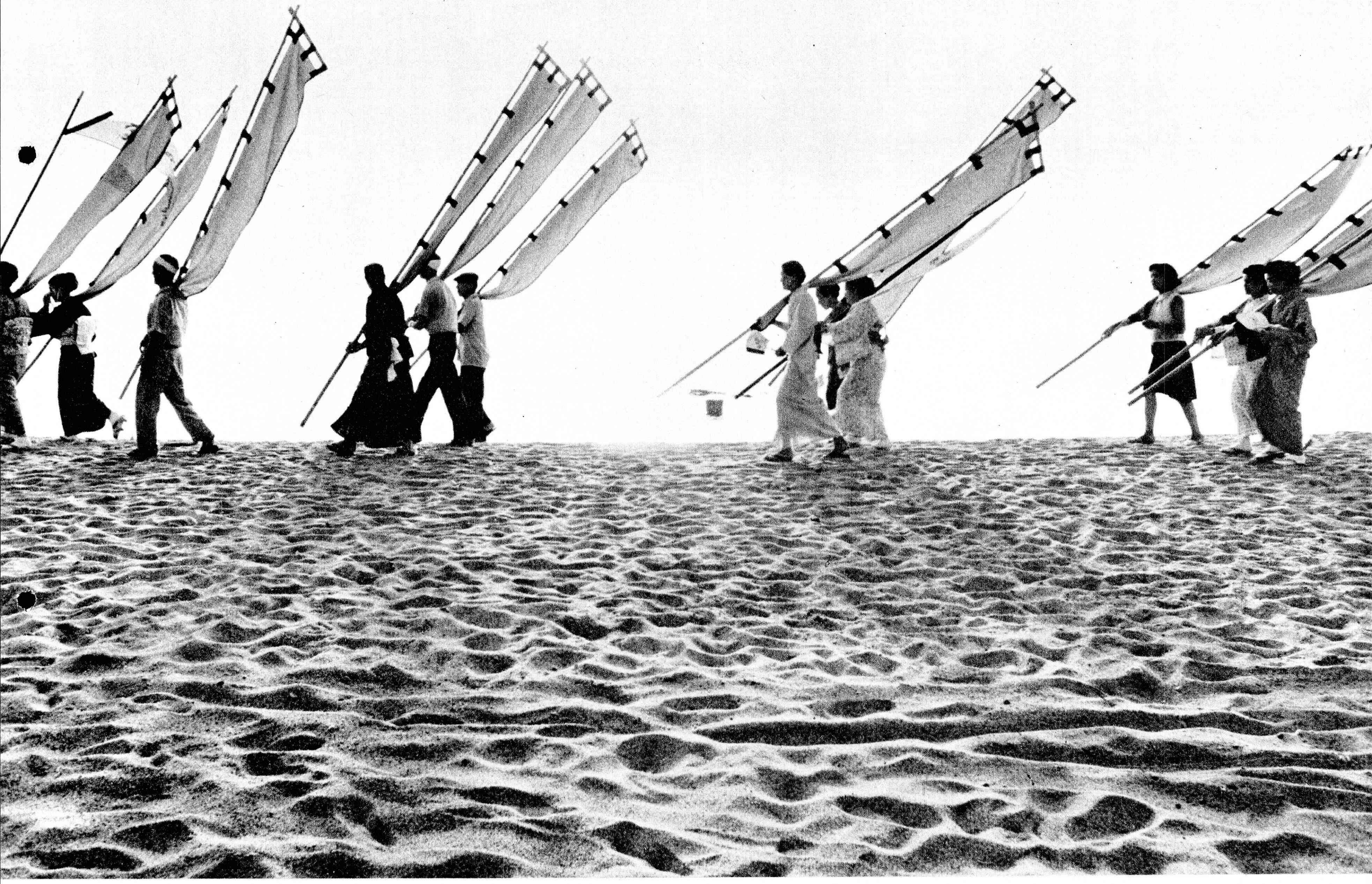
The festival held in July every year at the Kifune Shrine at Sukumo Island, an islet in the Seto Inland Sea, to pray for a big haul of fish. The *mikoshi,* shouldered by white-robed fishermen, crosses the sea for 600 meters to the opposite shore. On this day, fishermen enjoy unrestrained revels, drinking and eating to their hearts' content. (Photo by Noriomi Ito)



TIPS ON SHOPPING & DINING IN TOKYO









Hama-no Matsuri (Beach Festival)

There are many unique festivals in the Noto Peninsula, Ishikawa Prefecture, which protrudes into the Japan Sea. One is "Hama-no Matsuri," observed on August 10 and 11 every year at the Hiyoshi Shrine in Minatsuki, Monzen Town. Minatsuki is half-fishing, half-farming village, and the festival symbolizes prayers for a bumper harvest, a big haul of fish and safety at sea. Carrying red and white "sacred flags" fluttering in the wind, villagers march on the beach at dusk, followed by a "sacred horse" and *mikoshi* (portable shrine). The festival is marked by its rustic simplicity. (Photos by Tsugio Sakai)

All photos in this article have been selected from the prize-winning entries in the "Festivals in Japan" photo contest through the courtesy of the sponsor, the Asahi Optical Co., Ltd.

JAPAN'S ELECTRIC MEASURING INSTRUMENTS

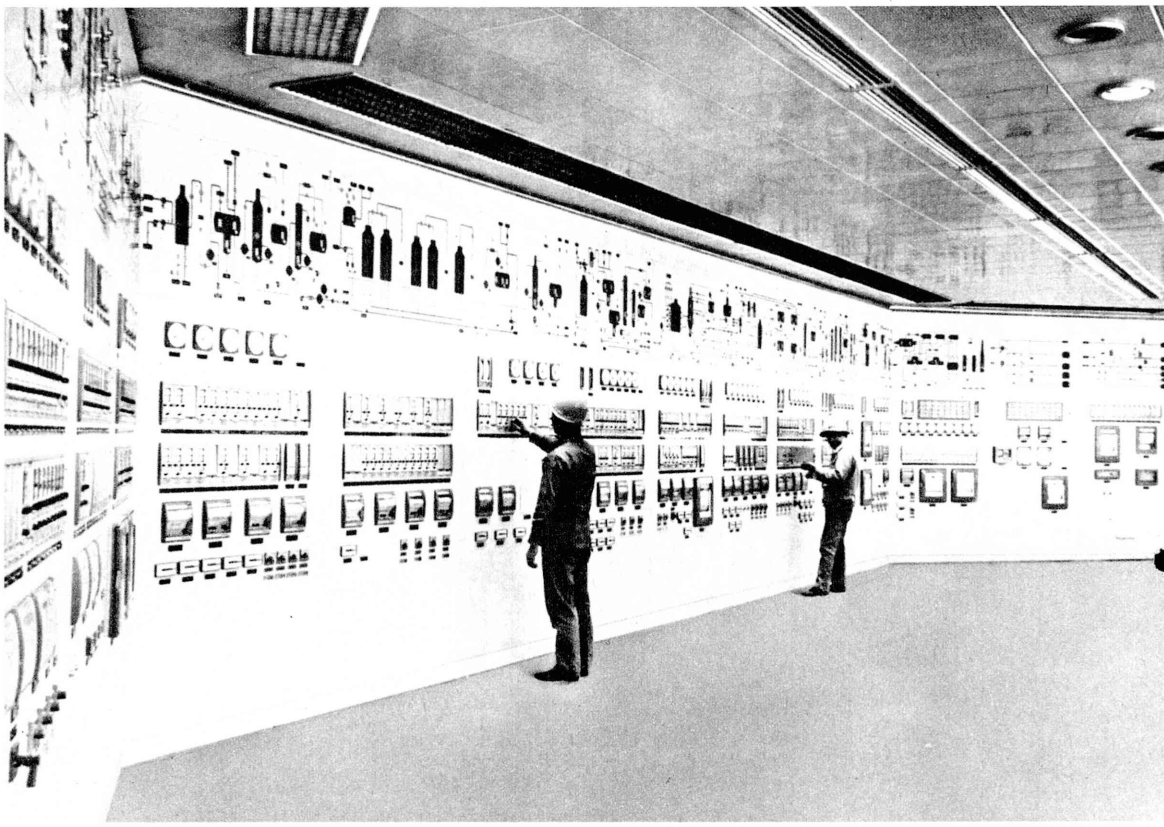
— EXHIBITION TO BE HELD IN TOKYO IN OCTOBER —

THE technical standards of electric measuring instruments give the measure of a nation's industrial technology as a whole. For such instruments are indispensable for every facet of all industries, while their development and manufacture requires highly advanced techniques. Moreover, accurate measurement is the starting point of modern industry, and without them there could be no development of new technology.

Japan's electric measuring instrument industry ranks among the best in the world as might be expected as this country boasts the second largest gross national product (GNP) in the non-Communist world. This is evident from exports of the instruments. Japanese-made electric measuring instruments are now exported to upward of 100 countries the world over, including not only advanced industrial states, such as the United States, West Germany, Britain and France, but also the Soviet Union, Communist China and other nations in the Communist bloc. This attests to a high reputation being enjoyed by these Japanese-made instruments.

The production value has been on the steady rise year after year. According to statistics compiled by the Japan Electric Measuring Instruments Manufacturers' Association (JEMIMA), Japan's production of such equipment climbed from about 50,000 million yen in 1963 to 116,000 million yen in 1968, more than doubling in the five-year period. To break down last year's output, instruments and automatic controls for industrial process accounted for the largest proportion, amounting to 66,500 million yen or more than half the total. Ranking second were electrical measuring instruments worth 30,500 million yen (voltage, current and power meters, electromagnetic wave measuring instruments, frequency counters, etc.), followed by watt-hour meters worth 8,100 million yen, electrical indicating instruments valued at 8,000 million yen (ammeter, voltmeter, etc.) and radiation measuring instruments worth 2,800 million yen (gamma ray thickness meter, neutron moisture meter, etc.).

Exports, meanwhile, more than quadrupled in five years from 4,300 million yen in 1963 to 19,400 million yen in 1968. The ratio of exports to total production also climbed from a little less than 9 per cent in 1963 to 17 per cent in 1968. The export value of 19,400 million yen cannot be termed great in comparison with the export amounts of other industries. But considering the fact that trust in measuring instruments leads to that in industrial manufactures as a whole, these electric measuring instruments may well be termed one of Japan's key export items.



Even a giant petroleum refining plant is controlled by only a few technicians manning the central control room. Such advanced automation has been made possible by the development of electric measuring instruments.

THE Japan Electric Measuring Instruments manufacturers' Association with a membership of 96 principal makers (established in 1939) predicts that the nation's production will about double to 200,000 million yen in the next five years under the impetus of growing domestic demand and export expansion.

The biggest boosting factor in the domestic demand is the rapid progress in the automation of factories. At present, the petroleum refining industry is most advanced in automation. And few workers are to be seen in the vast premises of refining plants. An impressive array of various measuring instruments and control devices in the central control room have taken over much of human labor. The same is true of rolling mills at modern steel works. Only a few technicians operate the whole of a giant factory by watching instrument panels and industrial television (ITV) screens in the control room. The thickness of rolled steel plates is automatically measured by radiation measuring instruments to ensure uniformity of quality.

In future, all industrial sectors, centering on process industries, are bound to seek the elevation of productivity through automation. And this automation trend is being given added impetus by an acute shortage of labor and a wage spiral. Already, any enterprise lagging behind in automation could not hope to survive industrial competition. And the progress of automation will directly spell an expansion of demand for electric measuring instruments as a whole.

In the meantime, a sharp growth is believed in store for Japan's exports of electric measuring instruments. For they fully measure up to top international standards in both quality and performance. Moreover, the demand is soaring in all countries. JEMIMA has thus far staged an independent exhibition twice in Moscow, and besides, has positively taken part in foreign exhibitions of measuring instruments. Now its intensive effort to publicize them is paying off in a big way, and the excellence of Japanese-made instruments is widely recognized all over the world. JEMIMA is, therefore, hopeful of sharply expanding exports on the basis of such a high reputation.

It plans to set up service stations abroad before long to provide after-sales services

ARE IMPORTANT EXPORTS

through system engineers. This is part of JEMIMA's program to boost exports by offering elaborate services to foreign users. Furthermore, it is pushing preparations to develop the biennial Japan Electric Measuring Instrument-Automation Exhibition in Tokyo into a grand international show comparable to the ISA Show of the United States and INTERKAMA of West Germany in the not distant future.

The progress of science and technology is giving birth to new industries one after another—for instance, the development of the information industry centering on computers, practical application of atomic energy and development of the oceans, which constitute an inexhaustible treasure house. But no new industrial evolution is conceivable without measuring instruments. These are an absolute necessity for controlling atomic energy or exploring deep-sea resources. That is why ever-growing expectations are being placed on their development by industrial circles as a whole. And Japan's measuring instrument industry, backed up by highly advanced electronics, will no doubt justify to such expectations.

The 13th Japan Electric Measuring Instrument-Automation Exhibition is to be held at the World Trade Center at Harumi, Tokyo, for five days from October 11 to 15 to give a panoramic view of Japan's electric measuring instrument industry, which is one of the best in the world. A total of 80 measuring instrument manufacturers will display their latest products at this year's show.

For further details of Japan's electric measuring instrument industry and the exhibition, please contact the **Japan Electric Measuring Instruments Manufacturers' Association** (105, No. 20, Shiba-Kotohira-cho, Minato-ku, Tokyo; Tel: Tokyo 502-0601).





Left: Foreign technicians come to Japanese manufacturers to undergo training in the use of electric measuring instruments. Above: Part of a plant turning out synchroscopes.

THE EAST AFRICAN DATSUN RALLY?









Actually, it's the East African Safari Rally, and it's got no connection with DATSUN at all. Except that this year DATSUN won 1st, 2nd, 3rd, 4th, 5th and 6th place! An astounding class victory in the most rugged rally of them all. This is the demanding jungle-to-mountain 5,000-kilometer course that most cars can't finish! Only 31 out of 85 did. DATSUN also soared ahead to first place to capture the Team Event! A stunning triumph! And in direct competition with the world's most expensive cars, dauntless DATSUN emerged in 3rd and 5th place in the Over-All Event!
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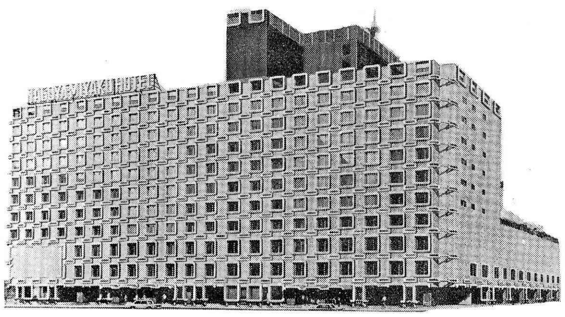
In this issue
SHINJUKU: Effervescent with Youthful Energy

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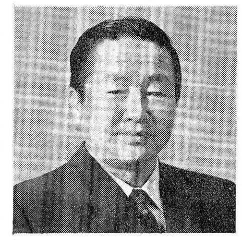
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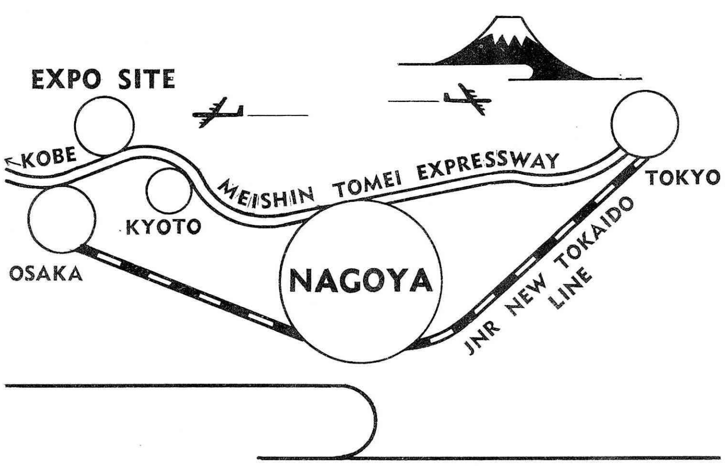


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In The Heart of Japan's Pearl Culture

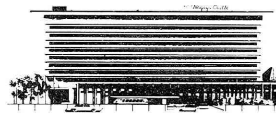


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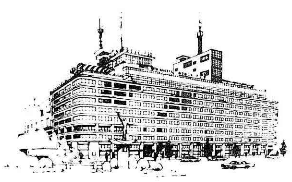
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CONTENTS



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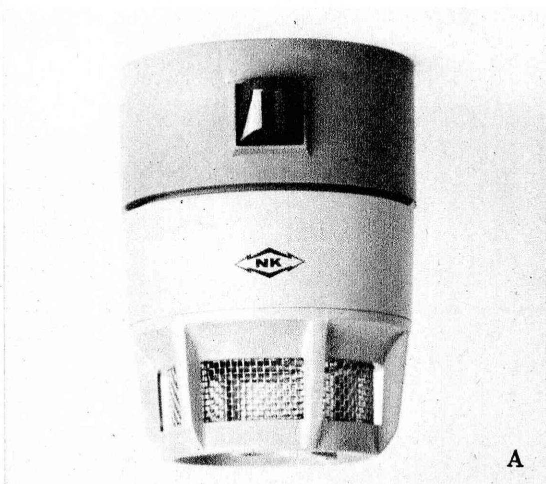
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Japanese Currents

APOLLO 11

Japanese-Made Appliances Contribute to Apollo 11 Feat

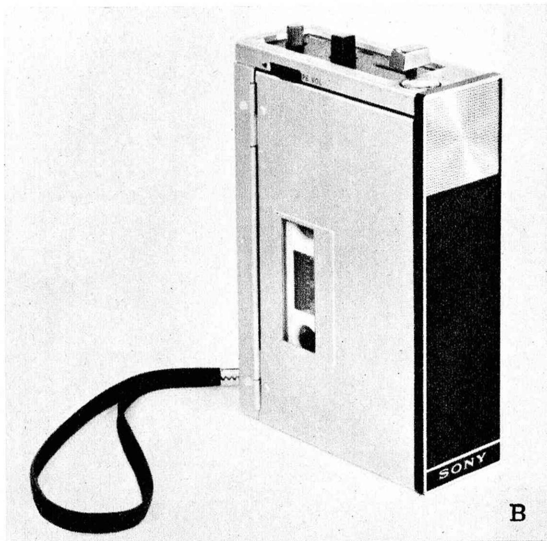
Many industries representing the cream of modern science contributed to the success of the Apollo 11 spacecraft's lunar landing mission. And several Japanese-made appliances also played a part in helping accomplish the feat. Typical of these are the Nittan Ionization Combustion Detector of the Nittan Co., Ltd., a fire detector maker; the midget tape recorder TC-50 of the Sony Corp.; the Minolta Space Meter, an exposure meter of the Minolta Camera Co.; and the Hitachi RMU-6 Mass Spectrometer of Hitachi, Ltd.



A

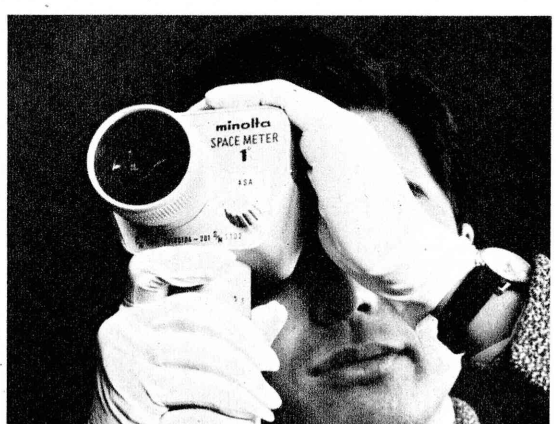
The Ionization Combustion Detector of Nittan Co. (Photo A) sounds an alarm as soon as smoke is generated by a fire. This means that an electric current flowing in the detector undergoes a change through the agency of radiation, to set the alarm device in motion. Installed in the Apollo 11 was the NID-18 type (priced at 12,500 yen in Japan). It passed a test by the National Aeronautics and Space Administration (NASA) because of its superior performance, light weight (650 grams) and small size (9 centimeters in diameter and 12 centimeters in height).

Sony's tape recorder TC-50 (Photo B) is a cassette-type tape recorder incorporating IC (integrated circuit). It measures 90 millimeters wide, 37 millimeters high and 135 millimeters deep and weighs 600 grams.



B

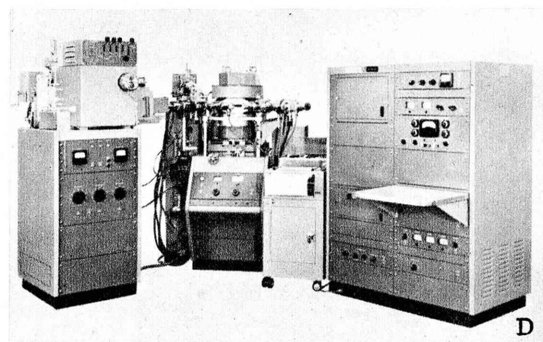
Despite its small size, the apparatus has a built-in microphone and is an automatic recording type. Therefore, anybody can use it easily without touching it. The maker thus claims the midget tape recorder ranks among the best in both performance and handiness. It is available at 36,000 yen (domestic price).



C

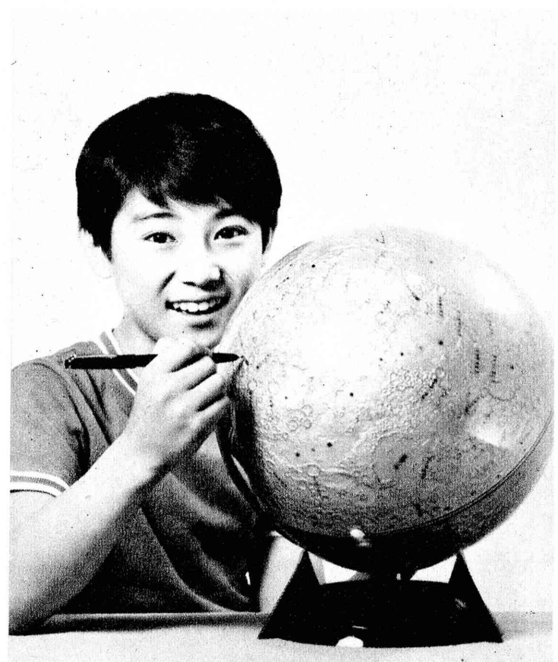
The Minolta Space Meter (Photo C) is a remodeled version of the generally marketed Minolta Auto Spot 1° of the Minolta Camera. At NASA's request, an improvement has been made to endure use in space. When an astronaut engages in TV transmission or photography, he has only to look into the finder and push a button to obtain the exact amount of light and shutter speed for proper exposure. The excellent performance and handiness of the device enables the astronaut to use it freely in spacecraft and on the lunar surfare wearing a space suit.

The Hitachi Mass Spectrometer RMU-6 (Photo D) was used to analyze lunar rocks brought back by the Apollo 11. Hitachi delivered two units of the spectrometer to NASA two years ago. This is a highly sensitive device capable of measuring a weight difference of one-100 millionth. It is a focal point of attention the world over whether there are organic compounds on the surface of the moon. And Hitachi's spectrometer is playing a part in solving this riddle.


D

Solid Lunar Globe Selling Fast

The feat of the Apollo-11 spacecraft has generated somewhat of a space boom among children. At department stores, "space toys,"



including such expensive ones as space stations priced at about 10,000 yen, are apparently selling like hotcakes. This is also true of the Maruzen Co.'s Lunar Globe (photo), said to be the world's first solid model of the whole moon, and the company's plant is operating at full capacity. Made on a scale of about 1/10,000,000, the globe has a diameter of 30 centimeters. Solidly shown on the surface of the globe are mountains, ranges, seas, inlets, headlands, lakes, oceans, etc. with scientific exactitude. It is covered by a smooth transparent film of plastic, making it possible to enter place names and destinations of rockets with felt-tip pens using water-soluble ink. This is a unique innovation in which Maruzen takes special pride. (Price in Japan: 4,500 yen).

EXPO '70

Various EXPO '70 Events Decided

The Japan World Exposion, Osaka, 1970 (EXPO '70) will be held for 183 days from March 15 next year. And now with only six months to go before the opening of the exhibition, preparations are making steady headway. Recently, programs for various performances and commemoraitve lecture meetings to be held during the world fair were finalized and announced. According to these first-rate artists, scientists and other celebrities are to converge on Japan from all over the world. Therefore, the 1970 world exposition, the first to be held in Asia, will literally become a "festival of the century."

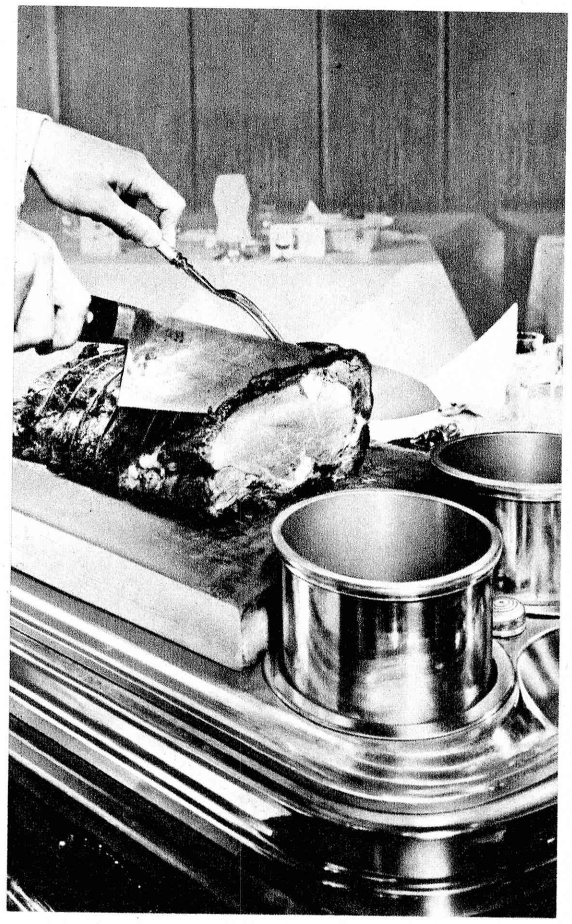
The musical performances include 28 programs (106 performances) in the classic and 20 (241 performances) in the popular divisions.

The classic programs to be presented at the Osaka Festival Hall in Osaka will bring together the representative orchestras of various countries, such as the orchestra and chorus of the Berlin German Opera, the Paris Philharmonic Orchestra, the Berlin Philharmonic Orchestra, the Leningrad Philharmonic Orchestra, and the New York Philharmonic Orchestra. Among distinguished musicians coming here are the great Soviet conductor Evgenii Aleksandrovich Mravinskii, pianist Sviatoslav Richter and Herbert von Karajan, who will conduct the Berlin Philharmonic Orchestra. The Japanese conductor Seiji Ozawa will conduct the New York Philharmonic Orchestra. Music lovers will thus be able to enjoy an array of "dream programs."

The popular programs to be given at the EXPO Hall include the Ed Sullivan Show, a popular TV program in the U.S. for the past 20 years, which will feature "big talent" performers in various parts of Asia. Among other fascinating programs, which only a world exposition could put together, are Frank Sinatra's one-man show and the Northern Russia Folk Song Chorus. In addition, visitors will be treated, free of charge, to representative folk dances of 29 countries to be performed at the Festival Plaza with more than 25,000 persons taking part.

Furthermore, a galaxy of dignitaries will be invited to commemorative lecture meetings. Three have already agreed to come to Japan —namely, United Nations Secretary-General U Thant, Edmund P. Hillary, the first man to reach the summit of Mt. Everest, and President Felix Houpho uet Boigney of the Ivory Coast. Other personages likely to be invited include Charles Chaplin, the "king of comedians;" the three astronauts of the Apollo 11 spacecraft, Neil Armstrong, Edwin Aldrin and Michael Collins; the distinguished British actor Sir Laurence Olivier, Aleksandr Ivanovich Oparin, Russian biochemist; and Walter Lippman, American journalist. The list of 25 lecturers, including five Japanese, will be announced before the opening of EXPO '70.

Furthermore, 111 Japanese works of art were recently chosen for display at the EXPO Art Museum. These include 39 "national treasures," such as "Dozo Kannon Bosatsu Ritsuzo" (carved statue of the Goddess of Mercy) of the Yakushiji Temple in Nara. This has brought to 285 the number of Japanese art objects to be exhibited at the museum. In addition, 146 foreign works of art have so far been chosen, and their first-class art objects, both Japanese and foreign, are expected to be included in the list of exhibits. Therefore, the art museum in the fair grounds will provide a feast for the eyes of Japanese and foreign visitors to EXPO '70.

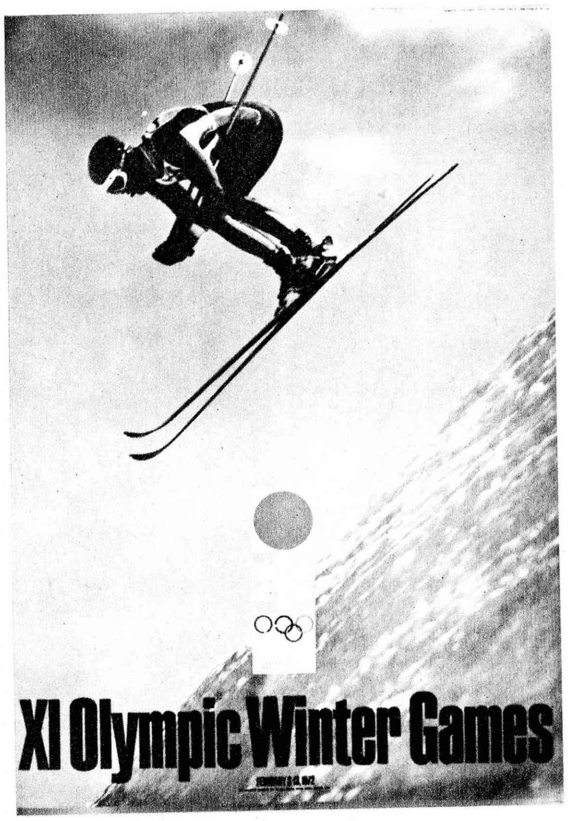


Japanese Currents

SAPPORO WINTER OLYMPICS

2nd Posters for Sapporo Winter Olympics Distributed

The second posters for the 11th Winter Olympics to be held in Sapporo, Japan, from February 3 to 13, 1972 have recently been completed and distributed at home and abroad. Unlike the first posters, they feature a skiing scene. Designer is Yusaku Kamekura, famed for his posters of the Tokyo Olympic Games and the Japan World Exposition, Osaka, 1970 (EXPO '70). Cameraman is Kiyoshi Fujikawa.



TRANSPORTATION

Tokaido Superexpress Trains Run 100 Million Kilometers

The distance covered by the superexpress trains of the New Tokaido Line since the start of the service on October 1, 1964 exceeded the 100 million-kilometer mark in August. This is said equivalent to a total of 132 round trips from the earth to the moon and about equal to the distance from the earth to Mars.

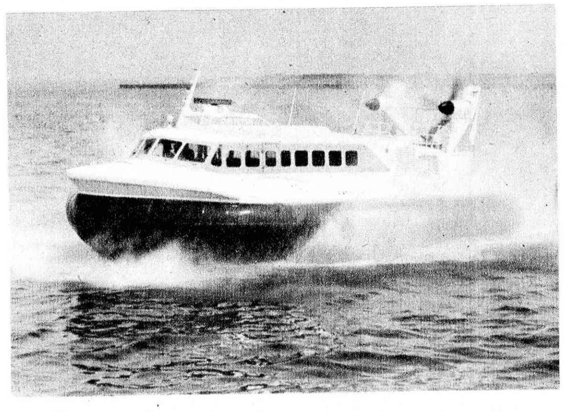
According to the New Tokaido Line Branch of the Japanese National Railways, the superexpress trains at present make 90 round trips between Tokyo and Osaka on holidays, covering a distance of about 87,000 to 93,000 kilometers. This represents a sharp rise over 30 round trips a day covering about 30,000 kilometers at the start of the service. By the time the Japan World Exposition, Osaka, 1970 begins in March next year, the superexpress trains will be running at intervals of only about six minutes and a half—a really "congested" timetable like that of electric trains in Tokyo.

Meanwhile, a daily average of close to 250,000 passengers are now carried by the New Tokaido Line. Since the inception of the service, the superexpresses have hauled approximately 250 million passengers. This works out at more than two rides for each Japanese. Earnings from the trunk line have already far surpassed its construction cost of 380,000 million yen, making it a big money earner for the national railways.

Furthermore, there has not been a single casualty due to an accident among the passengers of the New Tokaido Line.

Japan's 1st Full-Fledged 50-Seat Hovercraft Completed

The Mitsui Shipbuilding & Engineering Co., Ltd. recently completed and delivered Japan's first full-fledged medium-sized hovercraft with a seating capacity of 50 to the Meitetsu Kaijo Kankosen Co. The vessel has been put in service on a 58-kilometer route between two major tourist spots on the rim of Ise Bay—



Gamagori in Aichi Prefecture and Toba in Mie Prefecture. This hovercraft MV-PP5 (photo) has been manufactured for commercial passenger transport with particular emphasis on low maintenance and operational costs in view of geographical and economic conditions peculiar to this country. The craft lifts itself over the water or ground surface by blasting pressure air from the bottom. It is a new means of high-speed transport (100 kilometers per hour) traveling at on an air cushion with propulsion supplied by propellers mounted atop the craft. The new passenger service is expected to prove the excellent performance of the amphibian hovercraft with terminals on land.

MOUNTAIN CLIMBING

Japanese Climbing Parties Active in European Alps



(UPI Photo)

The ban on climbing the Himayalan peaks has been lifted this year for the first time in four years, ushering in a full-fledged mountaineering season. In Katmandu, the capital of Nepal, brisk activities have started by climbing parties of various nations, centering on Japanese expeditions set to scale the high peaks in the Himalayas. Meanwhile, against the background of an overseas travel boom in this country, so many Japanese climbing parties have converged on the European Alps in the past several years that their accurate number is hardly obtainable.

Two of the Japanese parties visiting the European Alps this season have pulled off

remarkable feats—that is, the opening of a new direct route for the ascent of the Eiger North Face and the successive climbing of the "Big Three" north walls of the European Alps. They scored these successes ahead of many other parties set to attain the same goals.

One was a six-member party (including a woman) of the Japan Expert Climbers' Club, which set out to scale the Eiger North Face (altitude difference between the starting point and the 3,974-meter peak is 1,800 meters), feared as the "Devil's Wall," by a new direct route. All members of the party reached the summit at 11 p.m. August 15 or 33 days after starting the ascent. This represented the second direct-route ascent of the North Face. In the winter of 1966, an American-German party climbed it also by a direct route. But the Japanese party was the first to accomplish the feat without a single accident. (photo)

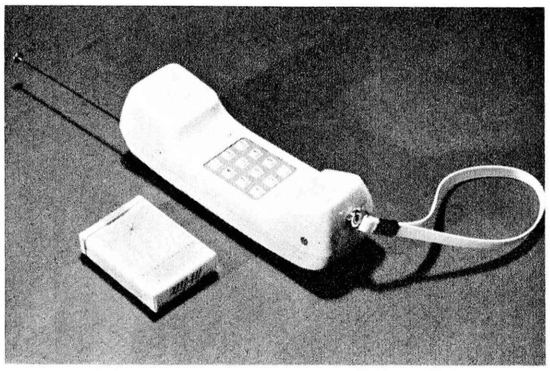
The team used Japanese-made climbing equipment, and its members were reportedly encouraged by domestic-style instant foods during the ascent.

The other party, which attacked the "Big Three" north walls in succession, consisted of two members—Kenjiro Fujioka and Kimio Matsui. The pair completed the climb of the Grandes Jorasses (4,206 meters; altitude difference—1,200 meters) on July 22; the Eiger North Face on August 11 and the Matterhorn (4,477 meters; altitude difference—1,113 meters) on August 21. They thus scaled all of the "Big Three" north walls of the European Alps in a single season—probably for the first time in the world.

Young climbers always seek to scale "higher and more difficult mountains." The latest feats by Japanese climbing parties will undoubtedly increase the number of climbing enthusiasts trying to scale the rocky walls of the European Alps and the Himalayas. This is an age in which hitherto unthinkable adventures, such as a descent from a Himalayan peak by ski and a direct ascent of giant rock walls, are being attempted one after another. Yet a rush of climbing attempts, simply lured by stories of recent successes, would be open to question. For mountains will open their doors only to those who climb them with excellent techniques and physical power after careful preparations and intensive training.

COMMUNICATION

Phoning while Walking—Portable Telephone



A convenient, small portable radiotelephone (photo) enabling conversation with anybody at any place anytime just like the ordinary telephone has been developed by the Telecommunication Research Institute of the Nippon Telegraph and Telephone Public Corporation to be used at the Japan World Exposition, Osaka, next year.

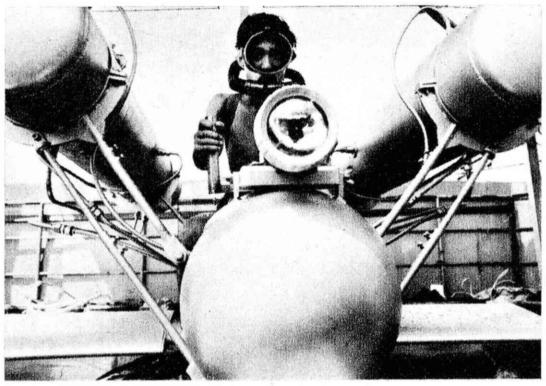
The new radiotelephone looks like a headset of an ordinary telephone. Weighing 650 grams, it contains not only a dial, but also a wireless transmitter and receiver for communication with a nearby telephone exchange. So very handy because it is cordless and its size has been largely reduced through the use of IC (integrated circuit). The portable telephone can be carried in a handbag. All you have to do to place a call is just to push a button and dial.

In future, the research institute hopefully predicts, the bearer of a radiotelephone will be able to talk to a person abroad while walking. At present, the price is still high since the new telephone is still in the stage of trial manufacture, and so it may be several years before it can be put to practical use.

NEW PRODUCTS

Underwater Scooter

Hitachi Zosen (Hitachi Shipbuilding & Engineering Co.) has recently unveiled an experimental model of an underwater tandem scooter convenient for both work and recreation.



Made of anti-corrosion aluminum alloy, the scooter's main body with a built-in power source and engine measures 2.95 meters in length and 0.4 meter in diameter. Attached on both sides are tanks, each measuring 1.95 meters long and 0.32 meter in diameter. The buoyancy-adjusting tanks and a propeller, driven by a ½ horsepower direct-current motor in the rear, enables the scooter to be operated freely in all directions in the sea. Speed is 4 kilometers per hour or just appropriate for a stroll in the sea. Moreover, the scooter can descend to the depth of about 30 meters. The total weight is 410 kilograms.

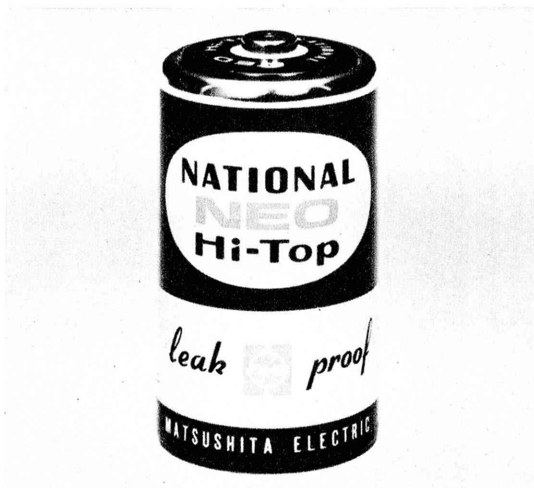
At present, the experimental scooter is designed mainly for laying, checking and repairing pipes on the sea bed, surveying ship hulls and transporting materials. But a partial design change can adapt it for recreation, such as in undersea rides. Price is one million yen or about the same as that of medium-size Japanese car.

Dry Battery with the Longest Life in the World

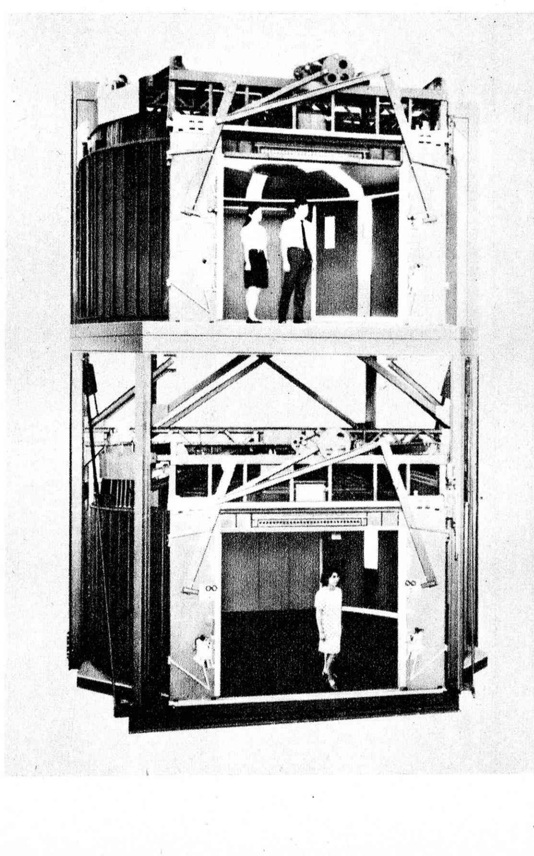
It is no exaggeration to say that the modern life is supported by batteries. This is evident when you think of the "cordless" tendency of electronic apparatus, such as radios, tape recorders and portable gramophones, as well as electrically-driven toys, electric shavers and battery-driven clocks. Therefore, batteries are in fast growing demand.

The new battery "NEO Hi-Top" (photo), recently put on the market by the Matsushita Electric Industrial Co., has a life three times as long as that of the conventional manganese dry battery. This is claimed to be the longest battery life in the world. Compared with the conventional battery, "NEO Hi-Top" lasts 3.2 times longer or 368 hours (four hours on the daily average) in the case of transistor radios and 3.6 times longer or 72 hours for tape recorders.

Patents and utility models relative to the new dry battery total 138 cases, including those pending in 17 foreign countries. Domestic price is 100 yen.



World's Largest Elevator for EXPO '70



Visitors to the World Exposition in Osaka next year will be able to a ride the world's largest elevator, completed recently by a leading Japanese manufacturer of electrical equipment.

The elevator, capable of accommodating 260 persons, was completed by Hitachi, Ltd. It will be installed at the Hitachi Hall, where the company's products are to be exhibited.

The colossal oil-pressure elevator is a two-storied affair six to seven times larger than an ordinary one and be used to transport visitors to the various floors in the hall.

The passenger compartment is of round shape with a diameter of six meters, and equipped with color illumination as well as accoustic devices in order to produce a mood befitting the exposition.

Doors have been installed both in front and behind the compartment so that passengers may enter and leave with ease.

Dry Ice Vest Makes Debut

"Cool Poncho," a comfortable heatproof vest for use by steel mill and shipyard workers in the sweltering heat of summer, has recently been put on the market by the Nippon Gyomo Sengu Kaisha, Ltd. (photo)

Steelmakers and shipbuilders have long been trying to find ways to prevent a decline in work efficiency in high temperatures during the summer. This is a problem especially in welding jobs and in work involving furnaces. When the atmospheric temperature reaches 35 degrees C, for instance, the actual temperature at a shipyard climbs to around 60 degrees as a result of radiant heat. Such unpleasant working conditions make it extremely difficult to recruit an adequate work force. Recently, therefore, more and more steel mills and shipyards have been adopting fully refrigerated work clothes of a "space suit" style into which compressed air is pumped.

"Cool Poncho" is a vest-like garment made of vinyl chloride fibers knitted into a net. Two pockets are attached to the front and four pockets to the back with the inside of each pocket covered with a highly effective heatproof material. Slabs of dry ice are placed in the pockets and work clothes worn

over the vest. The dry ice, when evaporating, absorbs heat, and the cooled air is kept from escaping by the work clothes. The cooled air travels through the net-like poncho, keeping the temperature on the surface of the body at a comfortable level. Moreover, the vest does not obstruct worker's free movement.

The price is 2,000 yen. The vest is adjustable to fit anybody by strings attracted on both sides. As for the dry ice consumption, a small slab—18 millimeters thick and 80 millimeters each in length and width—for each pocket is capable of effective cooling for about four hours. When the "Cool Poncho" is worn, work efficiency rises by about 10 per cent.



EDUCATION

Mechanization Enters Classrooms

Compulsory education in Japan is conducted in the form of a teacher giving lessons to about 40 pupils with the aid of a blackboard and chalks. Under this "simultaneous lesson" system, however, it is difficult to adjust education to the ability and individuality of each pupil. Thus a limit to this system has recently become a major problem with teachers.

In a bid to remove this bottleneck, Japanese makers have developed teaching machines. The Education Ministry has recently designated 22 lower secondary schools as model schools under a policy for a full utilization of teaching machines for education and leased such machines as Answer Checkers and video tape recorders to them. The Answer Checker enables the teacher to grasp each pupil's degree of understanding accurately while giving a "simultaneous lesson." When the teacher asks a question, pupils choose and push one of answer buttons set up on their desks, thus lighting the lamps of the analyzer. Thereupon, the teacher can see at a glance who answered a question. Moreover, each pupil's answer is recorded. This enables the teacher to scrutinize each pupil's answer later and prepare a teaching program with due consideration to individual differences.

The video tape recorder is designed to record school programs broadcast by TV stations and reproduce them whenever necessary. Therefore, a class may be divided into several groups according to pupils' ability, and proper teaching materials are prepared for each group with the aid of the video tape recorder. Moreover, the apparatus is used to record pupils' experiments and drills and later reproduce them so that they may see each other in action. This serves to enhance the effectiveness of lessons.

Then what useful results could be expected of such introduction of machines into classrooms?

Then what useful results could be expected of such introduction of machines into classrooms?

The results of tests so far conducted at some schools have proved satisfactory for both teachers and pupils. Teachers say they can give lessons while keeping close tabs on their pupils' degree of understanding, and also take proper steps to cope with individual differences. Pupils on their part say lessons have become quiet and enjoyable. They also say they can now understand them better. As a matter of fact, a certain lower secondary school has reported that the exams results of its pupils have exceeded the average marks in the district.

The Education Ministry has commenced two years of full-scale machine tests in a new semester opening in September. If the results prove satisfactory, it will install machines at lower secondary schools throughout the country in 1972. A wave of mechanization, so far progressing fast in various sectors of Japan, has now reached the world of education and will likely give birth to new educational methods.

SHINJUKU: EFFERVESCENT WITH YOUTHFUL ENERGY

The plaza at the western entrance to Shinjuku Station on a Saturday in July 1969. It is packed with young people gathering for a "folk song session."



Shinjuku is Tokyo's biggest amusement center described with varied epithets—as Town of Young People, Town of Underground Art, Psychedelic Town, Town of Songs, Anti-Establishment Town, Futuristic Town, etc. At Shinjuku Station of the Japanese National Railways, which forms the core of Shinjuku, a daily average of 1,300,000 passengers get on and off the electric trains. In addition, about 900,000 passengers are handled daily by the adjoining Shinjuku Stations of private railways. Shinjuku is supported by such vast numbers of people, and they never cease to swell year by year. The district on the eastern side of the station is crowded and cluttered with all manner of shops, department stores, restaurants, coffee shops, bowling alleys, go-go snacks, movie theaters, etc. On the western side of the station, a vast business center is under construction, where high-rise buildings will go up to accommodate 300,000 white-collor workers. Shinjuku is unfinished town, which keeps on expanding and transforming itself like a giant, greedy amoeba. It has a unique character, which accepts people of whatever kind without discrimination. The town is effervescent with the energies of young people, who rebel, create and seek the solidarity of their generations. Shinjuku reveals its truest colors from Saturday afternoon to midnight. Observable at the town are many, if not all, aspects of young people's life in the present day Japan.



Photos by MASAMICHI SUMIYOSHI

SHINJUKU reveals its truest colors from Saturday afternoon to midnight. Time: 4 p.m. on a Saturday in the summer of 1969. The setting: underground plaza at the western entrance to Shinjuku Station, where passengers getting off and on the trains of national railways, Odakyu, Keio and subway form a human whirlwind. Families pass. So do miniskirted girls with department store shopping bags. A young woman wearing pantaloons comes along. A middle-aged man, looking like a white-collar worker, hurries past. A group of students, outfitted for mountain climbing, enters the station. Amid a stuffy, hurried and noisy atmosphere, a sense of relief prevails after the week's work.

At a corner of the plaza, a red-helmeted student looking like a militant member of "Zengakuren" (National Federation of Student Self-Government Associations) is surrounded by three co-eds.

"Well, I can fully understand you are dissatisfied with the present government. But why do you wield wooden staves and battle with police?," one of the girls is heard to say.

Bills being passed out by the helmeted student bear hysteric words, such as "Let Us Save Students Unreasonably Arrested in the Struggle for Campus Liberation!"

"Look at the riot police," he retorts. "They are suppressing demonstrations we are staging on the basis of the Japanese people's lawful rights. We can win only by breaking through the stone wall of riot police, who are watchdogs of the Establishment. . ."

"But what would eventually happen if you approve violence like that?," the girl counters. "Wouldn't it result only in giving an excuse to the police for equipping themselves with still more powerful weapons?"

Voices become louder. And the words "democracy," "revolution," "vanguard," etc. fly through the crowd. Two young men join the "circle of debate."

"But why can't you take such actions so we wage-earners also can join in?," one of them asks.

"We believe our mission is to awaken the masses and show the direction of their advance," replies the red helmeted-student. Then a middle-aged man in a business suit participates in the debate.

"Why can't you demonstrate without wearing helmets and swinging wooden staves?," he asks. "We can't allow violence under any circumstances. The world wouldn't change so simply as you might imagine."

"But if we only denounce what the students are doing, we might lose sight of the true facts, don't you think? Japan today has varied contradictions, you know," says a youth wearing a blue suit in rebuttal to the middle-aged man. And thus the "circle of debate" gradually swells, now exceeding 10 persons.

Such circles of dialogue and debate form here and there in the plaza. Anybody who just speaks up can play a leading role in the debate any time. Some shout: "Don't condone the violent activities of leftist students!" and "It is the Japan-United States Security Treaty that forms the foundation of Japan's security!" Others shout themselves hoarse: "America should pull out of Vietnam!" and "Let's oppose the Japan-U.S. Security Treaty!" Topics are not limited to political subjects. Some circles engage in philosophical debate on, say, "isolation of individual persons in modern society" and "gap between generations." In other groups, young people discuss the "future vision of Japan," while still others preach new religions.

At about the same hour, various stores on the east side of Shinjuku Station are packed with young men and women—bookstores, coffee shops, young wear stores, ladies' shoe shops, "poster sellers" (a recently-emerging new trade in Shinjuku), etc.

TIME: 6 p.m. The setting: underground plaza at the western entrance to Shinjuku Station. Seven or eight young men show up with a portable microphone and loud speaker as well as guitars and start to sing "anti-war folk songs." The circle of persons surrounding them gradually swells and their earnest songs echo throughout the plaza. Almost all the songs are the so-called "protest songs" critical of the Government, the Establishment, the Vietnam war, etc.

Students of universities, preparatory schools and high schools, young women on their way home from shopping, young factory workers, shop clerks, white-collar workers in business suits . . . . strangers promptly make friends with each other, standing close shoulder to shoulder. "Whenever I come here, I feel I have a lot of friends," remarks a student, using emphatically the word "solidarity" repeatedly.

Time: 8 p.m. The number of young people singing folk songs swells to about 4,000, covering as much as 70 per cent of the plaza. Traffic cops and a riot police detachment stand nearby, silently watching the youths. Several gentlemen indignantly talk to the policemen: "Why don't police remove this traffic obstacle?" Overhearing this, another middle-aged man retorts: "They are not swinging wooden staves, can't you see? Why don't you allow them at least that much?" Loud songs are interspersed with chants of "Police, go away!" But the singing young people seem very happy. Most of them probably gather just to enjoy singing rather than to show their consent to the contents of the protest songs.

Time: 8:30 p.m. All the youths stand up with their arms on each other's shoulders. A resounding chorus of "We Shall Overcome" fills the plaza. With this as a signal, the folk song gathering breaks up. The seven or eight young men, who first touched off the singing, vanish unnoticed with their guitars.

At about the time the folk song singing reaches a climax at the underground plaza, a chorus of young people is resounding in the "singing tea shop" Tomoshibi (A Light) on the eastern side of Shinjuku Station. A 300-yen ticket for a cup of coffee entitles you to join the chorus in the giant shop seating as many as 400 customers. There is a stage on one side, and seats are arranged to face it. The tea shop is jampacked with many singing in the aisles. Every Saturday night, it is crowded to overflowing. Young people who gather here look no different from those converging on the underground plaza. But songs sung here have no such political touch



as characterizes those of the plaza. Most of them are popular songs which are familiar through the singing of famous TV stars. The band and singers on the stage are filled with service spirit. For American customers, they perform Stephen Foster's melodies. When a Briton comes in, a resounding chorus of a Scottish folk song greets him. In the air-conditioned tea shop, young people sing to their hearts' content for one or two hours, and then leave with an entirely satisfied look.

The go-go club Panic is about a five minutes' walk from the singing tea shop. Here, an underground musical "Throw Away Books! Let's Go Out into Town!" is presented by the "Tenjosajiki" (Gallery) troupe, the most aggressive of underground theatrical groups. Admission is 600 yen. When you enter, the powerful rhythm of an electric guitar band strikes you. There is no stage. Rather, all of the small shop—about 60 square meters—constitutes a stage. Old automobile tires are placed here and there, and those sitting on them are the audience numbering about 50. A superannuated car and motorcycle, flags, rope looking like a noose, a skeleton, etc. form the setting. Primary colors abound. Some 20 performers are mostly around 20 years old. They include university students and even a girl who professes to have deserted her parents in the countryside and come up to Tokyo. Suddenly, all lights go out. The electric guitar band strikes up a go-go rhythm at top volume. In the stroboscopic blinking light, the performers start dancing while singing at the top of their voice. Frenzied rhythm and frenzied lighting . . . frenzied speech and frenzied dancing . . . Carried away by the frenzied atmosphere, some spectators begin dancing with the actors and actresses. Unable to put up with the din, others go out. Most of the audience sits dumbfounded by the ebullient energies of the young performers bent upon shattering the conventional ideas of music, fine arts and drama and creating something new.

Time: 11 p.m. Shinjuku of Saturday night is still bustling at this late hour. The platform of the Chuo Line at Shinjuku Station of the national railways. Long thick lines of young mountain climbers waiting for a night train bound for the Japan Alps. The lines started to form during the daytime as the youngsters are eager to secure seats.



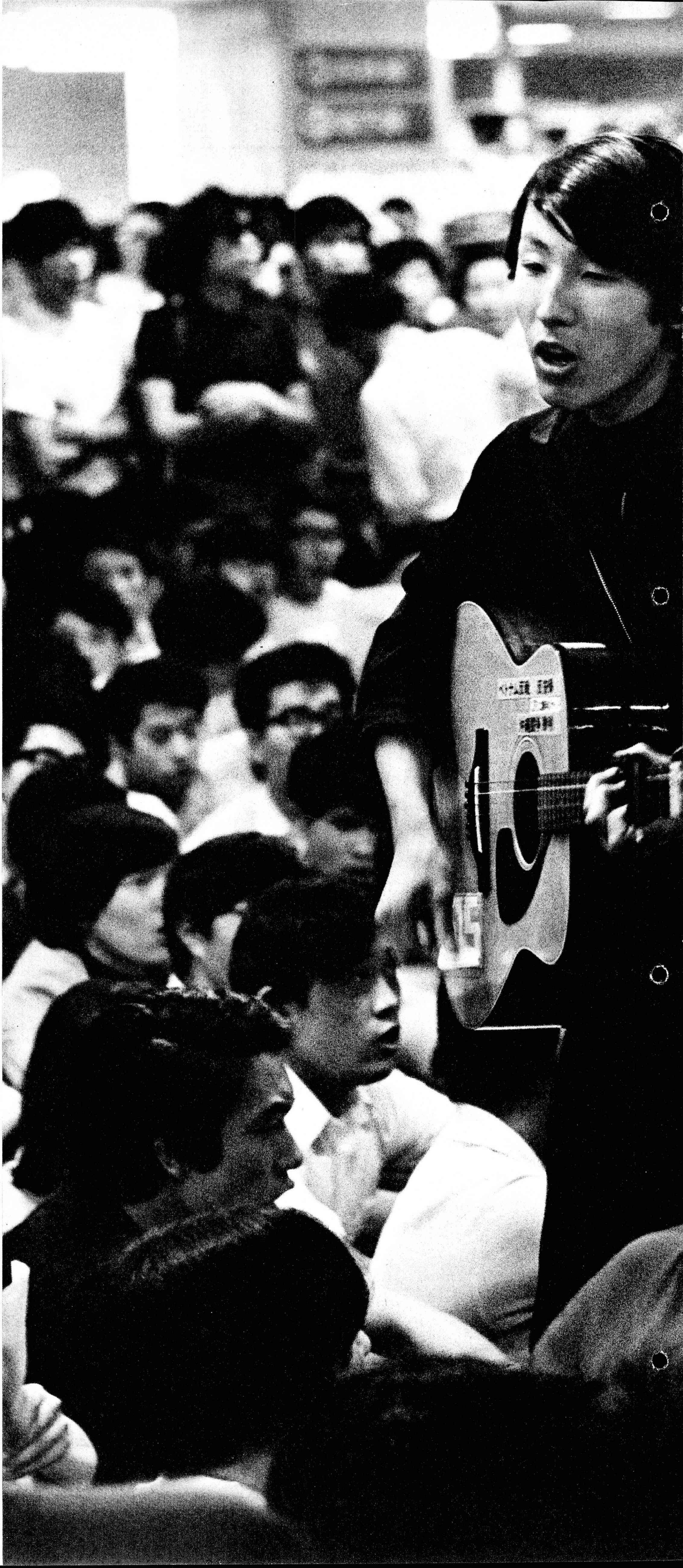
A gathering of young people singing protest songs.

NOT far from the central entrance to the station is the Fugetsudo tea shop. When you enter, strange-looking young people pop into your eyes—boys with long hair and beard and girls with white-stockinged legs jutting out of psychedelic miniskirts, all languidly leaning together against walls hung with avant-garde pictures and some of them chatting. Beside them are bedraggled Caucasians and Negroes. A youth, deeply engrossed in meditation, gazes at the ceiling. On the table are a book of essays by novelist Kenzaburo Ohe, highly popular with young people, and a comic magazine.

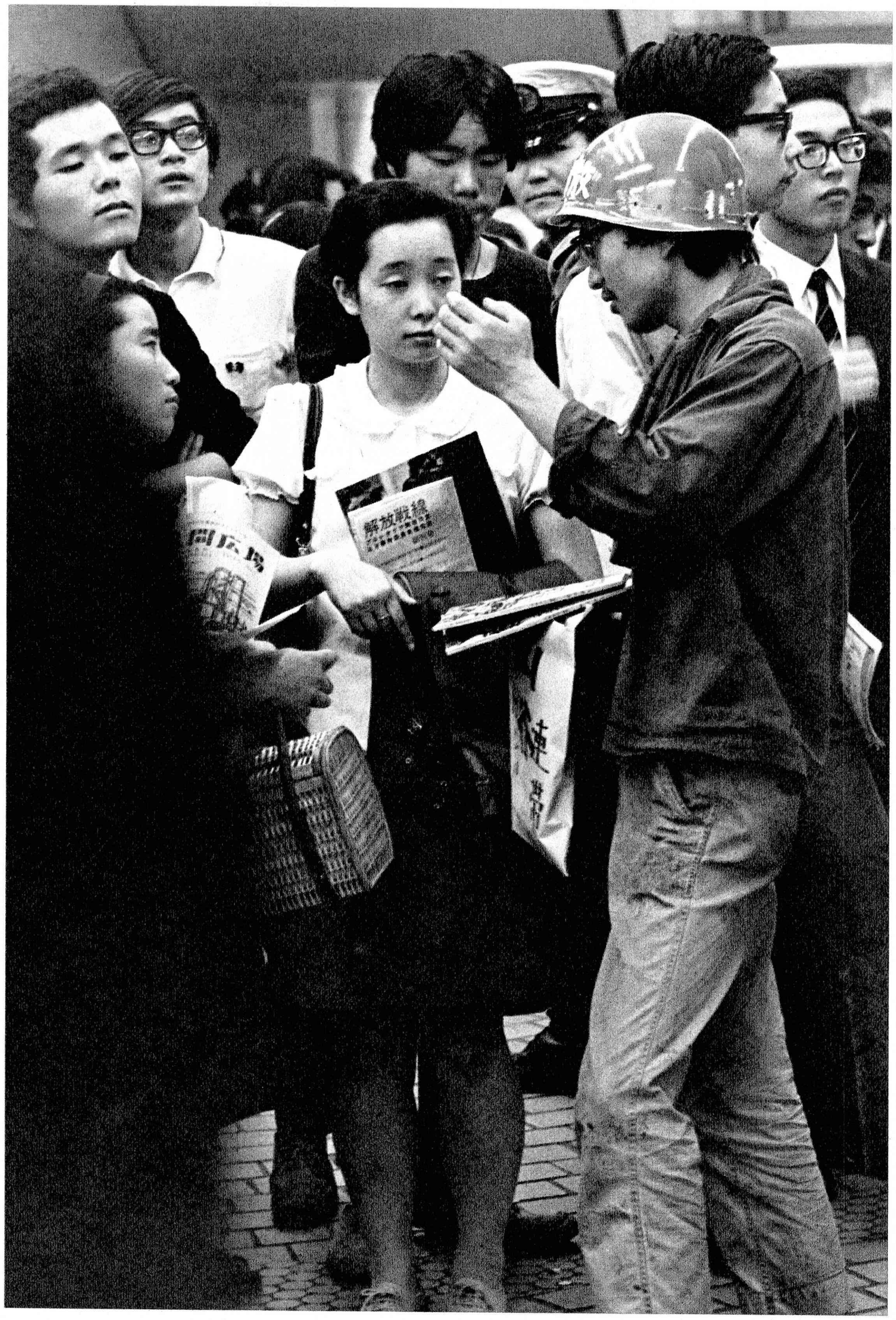
This place, long a favorite haunt of young painters and other artists, is now a typical den of youngsters called "hippies," "beatniks" or "futen" (Japanese word which formerly meant a lunatic), who profess themselves outsiders from the established society. Some seem self-complacent about showing off strange costumes. But others have articulate thoughts of their own.

A new day comes and it is now 2 a.m. Sunday. Trains jampacked with mountain-struck young people and last electric trains full of drunkards have already left Shinjuku Station. The tranquility of night has now enveloped the entire station. With not a soul to be seen, the geometric cement design of the underground plaza looks very cold. But Shinjuku is not asleep. There are all-night movie theaters and all-night snack bars. In the latter, some youngsters are absorbed in the discussion of art and life, completely forgetting about the passage of time, while others are dancing go-go like mad. There are also young men working hard at the construction sites of high-rise buildings on the western side of the station.

Thus on a Saturday night in the summer of 1969, Shinjuku was fraught with the ebullient energy of young people. Observable here were many, if not all, aspects of young people's life in the present-day Japan. One year after this night—that is, on a Saturday night in the summer of 1970, everything will be completely changed—the fashions of youngsters' costumes, topics at the spontaneous discussions in the underground plaza, songs at the singing tea shop, the lineup of hippies at the Fugetsudo, the repertory of the underground theatrical troupe, the titles of books in the hands of young literature lovers, and so forth. Yet Shinjuku will still be in process of greedy expansion and metamorphosis. And the town will still be overflowing with the energies of young men and women who rebel, create and seek solidarity.







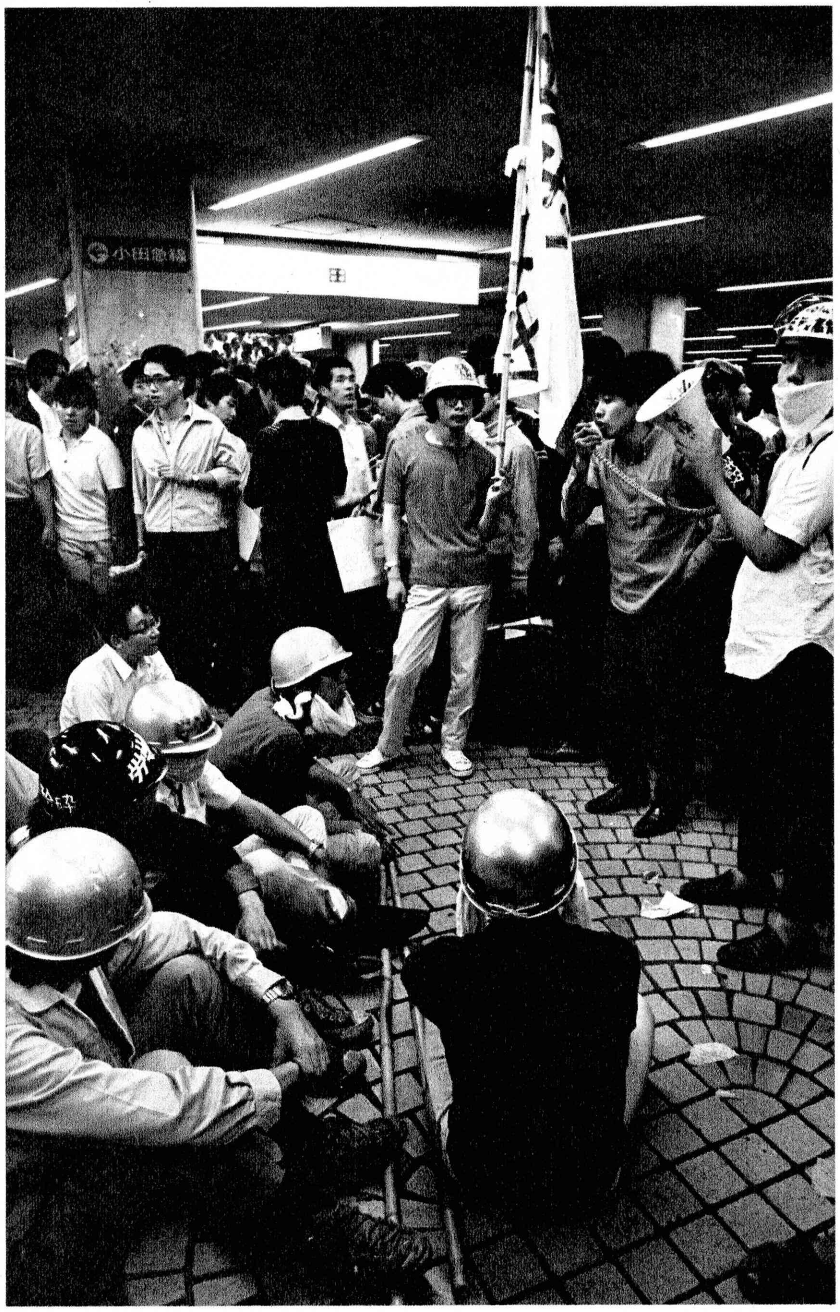
Left: Many of the songs sung at the folk song session are anti-Government and anti-establishment. But the singing youngsters wear no serious expression. Rather they seem to be simply satisfied and delighted with singing itself. Above: A youth looking like a radical "Zengakuren" student with a red helmet on passionately orates: "Our mission is to awaken the masses and show a direction for their advance." Some intently listen, but others pass by impassively.

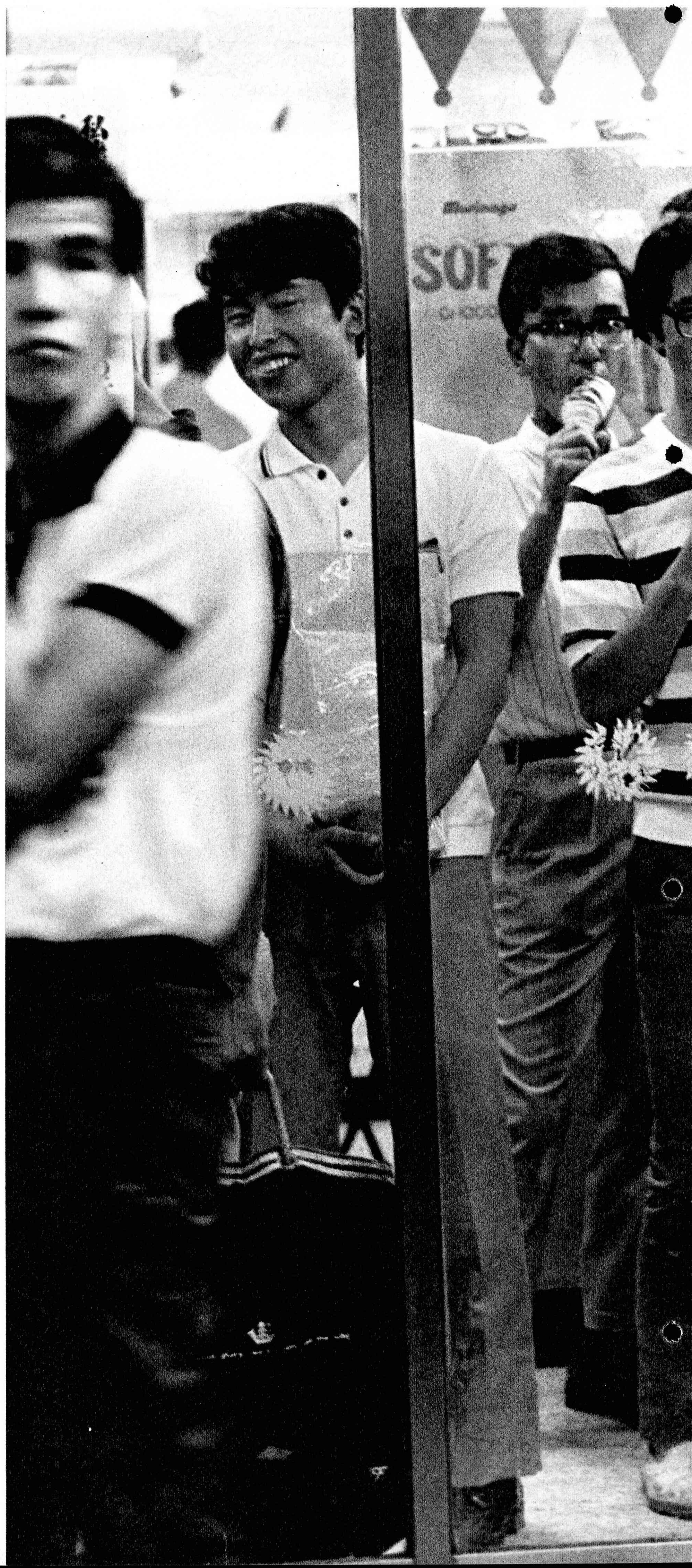






Along this most bustling street in Shinjuku, called "O-dori" (Boulevard), stretching for only 300 meters, there are as many as 11 ladies' shoe shops and six "young wear" shops. This eloquently testifies to the fact that the consumption economy in the Shinjuku district is supported primarily by young people and women. Signboards of the varied shops and department stores abound in slogans aimed at the youth—for example, "Fashion Shop for Young People" and "Rest Shop for the Youth."





Above: Helmets, towels used as mask, flags, staves for fighting and portable microphones—these represent a general "fashion" among radical student activists. Here in the underground plaza, they simply assert themselves unilaterally rather than seek a dialogue with citizens in general. Such words as revolution and vanguard repeatedly blare out of loudspeaker. Right: Nibbling ice cream cone on the street—a strange fad, which spread this summer first among girls and then even among boys. They are sensitive to whatever is considered a vogue rather than political problems. Called "non-poli" (non-political), they form one extreme of the Japanese youth with militant students as the other extreme.





A young man squats down in the underground plaza. A sheet of paper before him says he has traveled by bicycle 1,000 kilometers all the way from Hiroshima, repeating an appeal on the way to forestall a recurrence of the tragedy of atom-bombed Hiroshima. Shinjuku is replete with young men and women asserting themselves with particular vigor.





Conspicuous on the busy streets east of Shinjuku Station are quaint-looking youngsters called "hippies," "beatniks" and "futen." Some of them have philosophies of their own, while others are simply self-complacent about their odd style. Shinjuku has a strange charm, which fuses these young people into its atmosphere without ruthlessly snubbing them.

TIPS ON SHOPPING & DINING IN TOKYO



Past midnight, a group of young people chats before a shuttered shop. Are these "hippies," "philosophers" or just vogue-conscious boys?



A scene from an "underground musical" presented by Tenjosajiki Troupe. Frenzied rhythm and frenzied lighting . . . frenzied dancing and frenzied speech.


HERBIE MANN
HARLOW'S



New trades catering to the youth crop up in Shinjuku one after another. This poster shop is one of them. On sale are posters imported from all parts of the world. A portrait of Cuban revolutionist Che Guevara is seen among psychedelic and nude posters. Students of art and photography schools are said to be the best customers.



Members of the All-America High School Brass Band, which came to take part in the Japan-U.S. Exchange Clinic held at the camp last summer.

An enterprising music promotion association has recently opened a music camp in the midst of beautiful natural surroundings on the Shima Peninsula, noted for its cultured pearls. The camp covers a 330,000 square-meter site surrounded by stately pine trees facing the scenic Bay of Ago, a part of the 2,300,000 square-meter expanse of fine landscape known as the "Nemu no Sato" (Village of Friendship). The music camp is managed by the Yamaha Music Promotion Association, established by the Japan Musical Instrument Manufacturing Co., Ltd., one of this country's foremost producers of musical instruments.

But it is not a camp in the ordinary sense of the term. There are no tents or bungalows usually associated with a "camp." It is equipped with excellent facilities for giving music lessons and recitals. For example, there is a huge hall capable of accommodating an audience of six hundred persons as well as twenty structures containing rooms for ensemble lessons, outdoor practice facilities, a recording studio, training rooms, a library, a musical instrument repair shop, a medical clinic and a hotel. Nearby, in Nemu no Sato are a swimming pool, an archery range, tennis and volleyball courts as well as facilities for table tennis, yachting, motor-boating, water-skiing and fishing.

Nemu no Sato is thronged not only with crowds of music lovers but also with visitors on sightseeing trips. Full capacity attendance is a common sight at musical performances staged by the camp authorities.

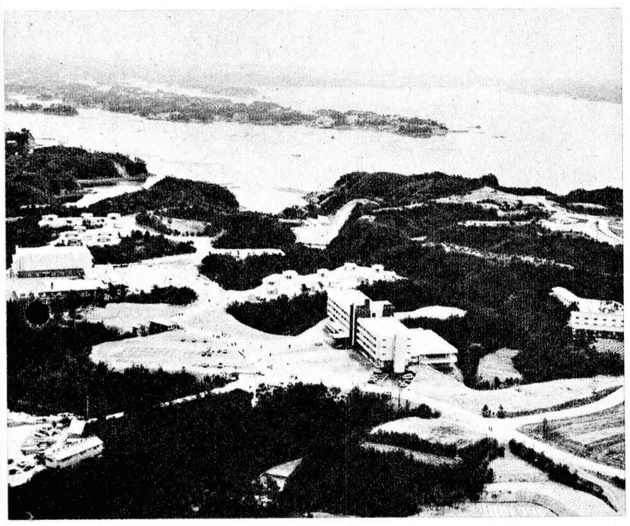
Brightly clad, young men and women with various types of musical instruments in their hands are enjoying themselves thoroughly in the camp learning how to play in a natural environment blessed with an abundance of golden sunshine, the sparkling emerald waters of the Bay of Ago and the lofty evergreen pine trees. Discipline in the camp, however, is rather strict as camp authorities issue day-to-day programs laying down rules of behavior. The campers are required to get up at 6:30 in the morning and all lights must be out by 10 at night. They follow a busy schedule every day engaging in lessons, giving concerts and enjoying themselves around camp fires in the evening. The purpose of the music camp is to build the character of the young people through music and a healthy and disciplined life.

Let us take a look at a typical scene in the camp. Here and there can be seen groups of young men and women either sitting or lying down on the green lawn. Some who are strumming the guitar while others are singing. There is one group earnestly engaged in discussing music while in the lesson rooms, the young campers are attentively

Music Camp in the Midst of Nature

listening to their instructors as if every minute is precious. Here we can see the bursting energy of healthy young people captivated by the charm of music. Together with the cake-shaped ensemble structures on the hill facing the sea and painted in various different colors, the youthful vigor of the campers and the pleasant atmosphere they create, fit perfectly with the environment of Nemu no Sato.

After participating in the various programs, the campers regroup themselves into separate parties and go to their respective lesson rooms. The instructors are made up of widely-known Japanese and foreign artists whose repertories range from the classics, light music down to brass bands and training of leaders. For example, in the field of light music, groups of jazz bands, group sounds and Hawaiian music live together and are instructed in methods to improve their techniques and elevate the effects of the ensembles. In seminars classified by types of instruments, a first-class instructor is appointed chief director and first-rate musicians are assembled under him. Aside from giving individual lessons, comprehensive training in ensembles is also provided.



A panoramic view of the Nemu no Sato overlooking the Ise Bay, the "Home of Pearls."

Recently an all-American high school brass band composed of 170 players visited the camp and an exchange clinic was held with an all-Japan high school brass band. Under the supervision of the leaders of the two bands, the campers studied diligently and contributed much toward creating friendly ties with the American players through this musical exchange.

The ultimate purpose of the camp is to elevate the musical level in Japan. The increase in the number of music enthusiasts means the creation of a brighter and spiritually richer nation. This camp will also be utilized as the stage for the performance of various types of concerts and music festivals, both domestic and international. Camp officials hope, in the future, to make the camp a site for the holding of large-scale international music festivals similar in nature to the San Remo Music and the Newport Jazz Festivals.

Guide to Yamaha Music Camp

Location: Osaki Peninsula, Hamashima-machi, Shima-gun, Mie Prefecture

Where to contact: Yamaha Music Promotion Association
1-1 Ebisuminami, Shibuya-ku, Tokyo, Suyama Bldg.
Tel. 03-719-3101-8



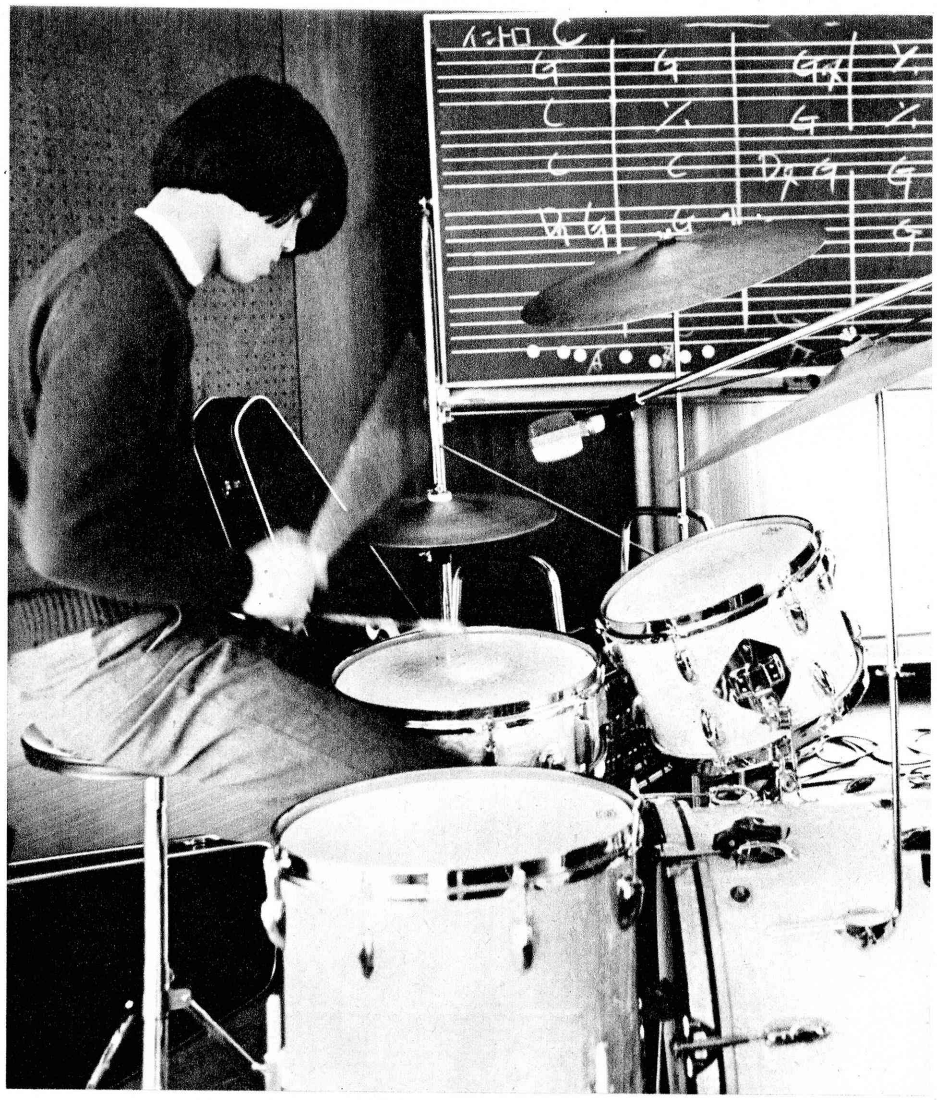
A boy intent on practice for the concert.



Above: Engrossed in tuning, completely forgetting about their study for entrance examinations.
Right: A chorus group singing with castanets.











Far above: A young music devotee. Above: An intermission during lessons—Youngsters engage in lively conversation on music.



THE FASCINATION OF

Photos by NAOTAKA HIROTA Text by R. G. PARKER



JAPAN'S RAILWAYS

The official name of the fastest trains in the world is Hikari—Sunlight—strikingly illustrated by this photograph of a streamlined nose in early morning sunshine.

ON a sunny October morning in 1961, a new diesel limited express sped past me as I stood beside the Shinetsu line near Karuizawa; this was the first run of Hakucho (Swan) the forerunner of a fleet of similar diesels that now speed over many main lines in Japan. Being the inaugural run, the front was decorated with flowers, the drivers at various stations had been presented with floral wreaths. All was new and fast, shiny and impressive. The passengers sat in their reserved seats and the driver had the latest equipment to ensure speed and safety.

Later that day, I travelled by bus to Joshu Mihara to visit the almost defunct Kusakaru Railway, even then reduced to half its original length and soon to close forever. The train consisting of a locomotive and one carriage set out with a load of school children.



The old and the new.

In the tiny cab the driver held a rope in one hand to keep the pantagraph in contact with the overhead wire and manipulated a controller and a hand brake with his other hand. The train wound around hillsides through magnificent scenery with autumn colours just beginning to tinge the trees. Arriving at the terminus the locomotive was recoupled and departed with the same precision as the limited express I had seen earlier.

What is the lure in railways that have such contrasting facets? What is the particular fascination about railways in Japan? It lies in their variety, in the mixture of old and new, in their complexity, their organisation and personnel and the way they serve the people.

The new, of course, is exemplified in that wonder of modern railways, the New Tokaido. Dashing along the east coast with about 80 round trips per day, carrying the businessmen, tourists, children on school excursions and honeymooners, they have become known to foreigners as "Bullet" trains, perhaps because of their shape, certainly because of their speed. On a clear day, from the wide windows you can see Mount Fuji reaching up into the sky, almost always snowcapped, eternally beautiful. This is the old, in fact the oldest, symbol of Japan, witnessing everyday the passing of the latest manifestation of progress.

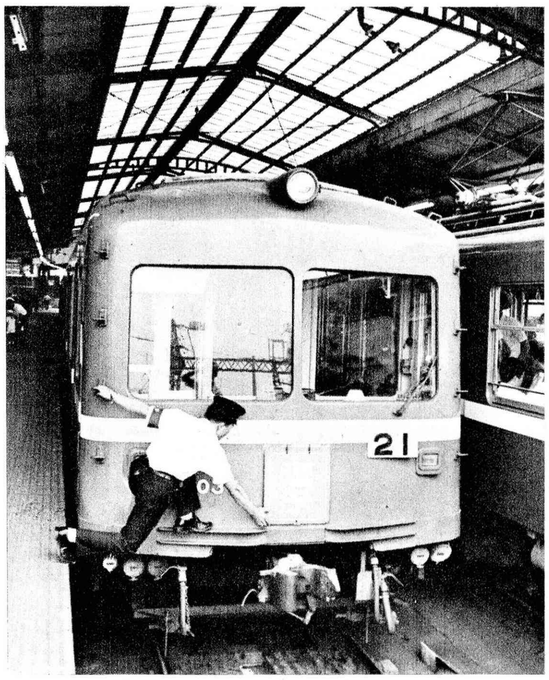
At Odawara, within sight of the castle which Hideyoshi besieged almost 400 years ago, one may stand on the station and watch the sleek blue and ivory monsters as they scream past on the centre tracks. A rush of air, the clatter of wheels and the twin red tail lamps at the end of twelve coaches disappear into the distance. And yet, here through the station there is a speed limit of 100 m.p.h.! The trains are slowed down from the normal running speed of 130 m.p.h. by the mass of electronic control gear that safeguards and regulates this intricate undertaking. I think of the years of research that backed up the construction and that is still continuing as the line is extended westward; I remember the test section near Odawara where all components were tested at higher and higher speeds, over and over, until the optimum performance was obtained and I remember when the whole new line opened in time for the Tokyo Olympics; I am impressed and enthralled.

BUT what about the predecessors of this giant? The 30th September 1964 comes to mind and I recall the sadness felt as 1:30 p.m. approached and the time for the last departure of the old "Kodama" came. A large group of railway enthusiasts gathered, a few short speeches, flowers for the crew, Auld Lang Syne and Dr. Shima's other masterpiece slid out on its last run to Osaka. This was not the end of the road for the Kodama type. They were multiplied and developed, some became dual ac/dc rail cars and throughout Honshu and down into Kyushu drivers perched in their high cabins keep vigil, calling the signals, noting carefully passing times of wayside stations and arriving at their destinations dead on time.

Once, after travelling in one of these trains I arrived at my destination over two hours late. The delay was caused by a large landslide at Yui brought on by torrential rain which had enveloped the Tokaido area all day. Yet I received a full refund of the express portion of the fare because the train had not been on time. This is the spirit in which trains are operated in Japan.

Hato (Pigeon) is one of the latest developments in the electric railcars which run on the narrow gauge (3'6") tracks that comprise most of the Japanese National Railways. The unique interest of this train lies in the fact that these are the first electric railcar sleeping cars in the world. At night they connect Tokyo and Aomori, Osaka and Kyushu; during the day they run on faster schedules over the same tracks as daylight limited expresses. The extra utilisation cuts down expenses and gives extra service.

To a large proportion of railway enthusiasts the ultimate fascination lies in steam locomotives; their appeal is universal. They please aurally and visually whether they are hauling expresses, freights or all stations trains. Before the electrification of the Tohoku main line a great pleasure often enjoyed by railway enthusiasts was to sit on the hillside near Okunakayama and watch trains being hauled up the heavy grade by the best of JNR's steam locos.



The conductor shows the way. With such wide windows, to stand right behind the driver while travelling at 100 km/h plus through the heavily congested suburbs of Metropolitan Tokyo is a thrill for boys of all ages.

High wheeled C62 Hudsons and the ubiquitous D51 Mikados (of which over 1,100 were built) stormed up, belching black smoke into the air, raising echoes from the hills on either side as the valley narrows. The train winds slowly upwards and you wait for the moment to press the shutter release—another record preserved for the day when steam is no more. If you are lucky the train is a "triple header" three locomotives straining with a thousand tons of freight. With pleasure I recall the last time I saw this magnificent sight and with regret I remember it has been replaced by electric efficiency.

WHY is it that steam locomotives, despite their obsolescence, still command such fanatical interest?

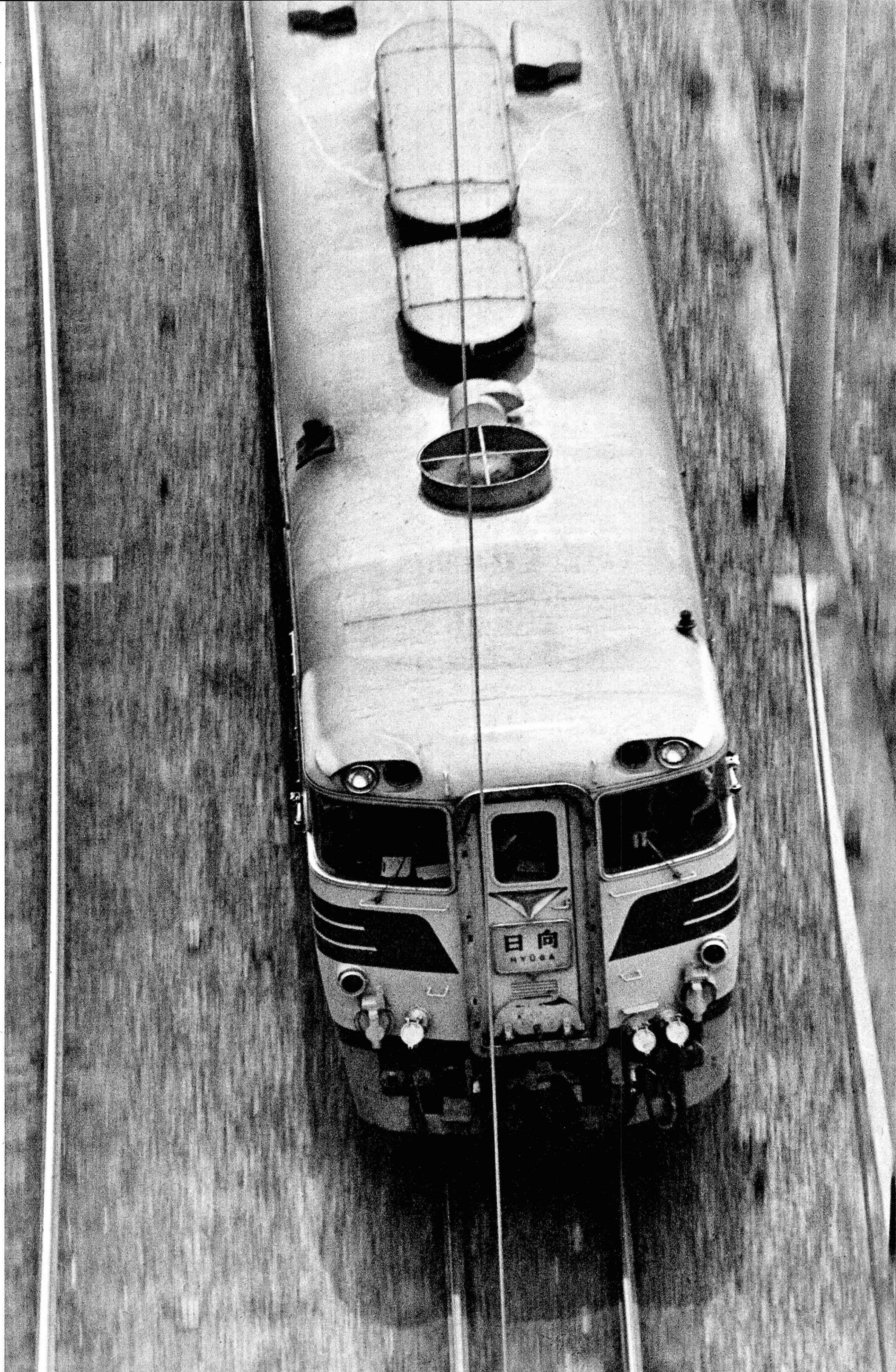
A ride on the footplate of a D51 has been my good fortune on several occasions and each time I thrill to the steady beat of the exhaust and the strong smell of coal smoke,

oil and steam. The fireman swings his shovel, the butterfly doors open and close with a hiss, the driver calls and the fireman repeats the signals, the locomotive grinds and clanks; the noise is terrific, only words shouted right into your ear one audible and the harder the locomotive works the hotter it becomes. Here one really feels one is experiencing railways to the full—all the senses are assailed by sights, sounds and smells that are peculiar to railways. The driver applies the brakes and air hisses out; a period ensues while nothing seems to happen and then gradually momentum eases, the train slows and finally stops—yet the locomotive is not dead; an air pump wheezes, safety valves blow off steam. Then a white plume appears from the whistle, the chimney spurts black smoke and with the noise of couplers taking up the train is away again. The essence of the scene is the living steam engine with its energy so much in evidence. This is what holds our interest.

For variety one need go no further than the maze of railways in the Tokyo area. Rolling stock of every possible colour, age and design threads over dozens of routes both national and private.

A favourite week-end diversion of mine is to take my twin seven year old boys(already dedicated rail fans) riding on railways around the largest city in the world. No matter where one goes there are alternative routes and a ride on six or eight trains in one afternoon is the usual thing. My children, of course, like to ride in the biggest and fastest and they call out with excitement as speed rises over one hundred k.p.h. Standing at the front, right behind the driver, we have the thrill of watching the track ahead, noting the signals and seeing other trains flash by. At a junction we change into a train of another colour and I am plied with questions about pantagraphs, speeds, stop signals, expresses—all the things that catch a child's eye. We return home relaxed, pleasantly tired and satisfied.

Behind all the machines, directing the organisation, running locomotives, manning signal boxes, taking tickets, conducting research are the men of the railway. To these men of all grades I owe a debt for explanations, for information provided, for help freely given. You are made to feel that you are a welcome guest whether it is the National Railways or the smallest private railway. Once, when I fell through a thorn bush whilst photographing near Osaka, a signalman insisted on bandaging my cuts, giving me refreshments and making me rest before going on my way.

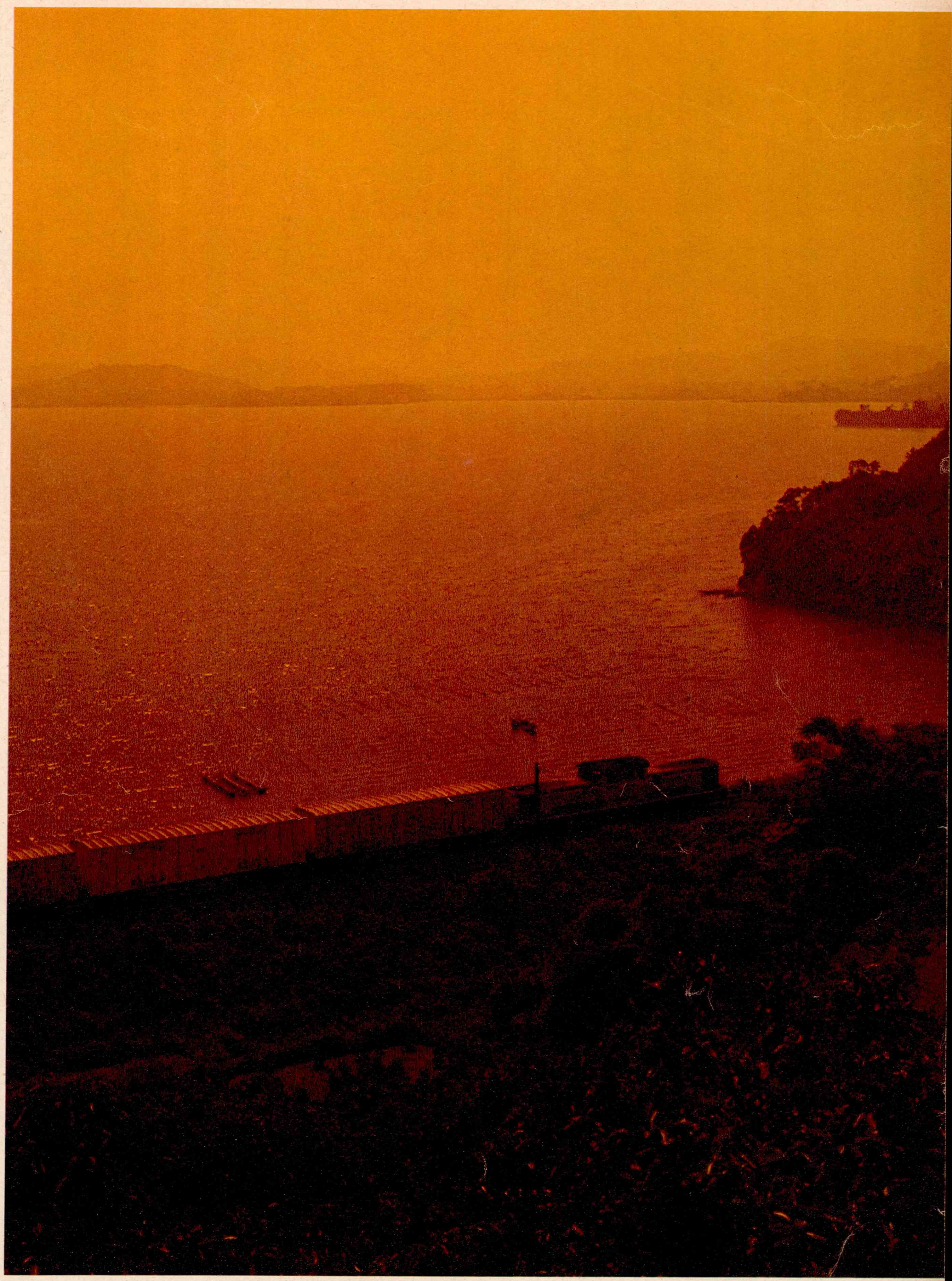


Since they first appeared in 1961 I have travelled many times in the comfort and speed of diesel limited express trains such as Hyuga.

Drivers and conductors on lines have explained details, quoted figures of horse power, speed, capacity—all the details that go to make up a railway—and have done so in such a spirit of co-operation and comradeship that I am forever grateful for the chances I have had to meet and talk with them and to have had their experience shared with me. No matter where you go in Japan railway men will assist you with finding a *ryokan* (Japanese inn) and visiting local places of interest; you drink green tea and make yourself at home in signal boxes or station offices. And really to a railway enthusiast this is a second home, a retreat from the cares of the world.







Nagasaki Prefecture where these two photographs were taken is famous for the quality of its sea foods. Some of the contents of the referigerator wagons will no doubt be used to prepare sushi (raw fish and rice) a great Japanese delicacy.





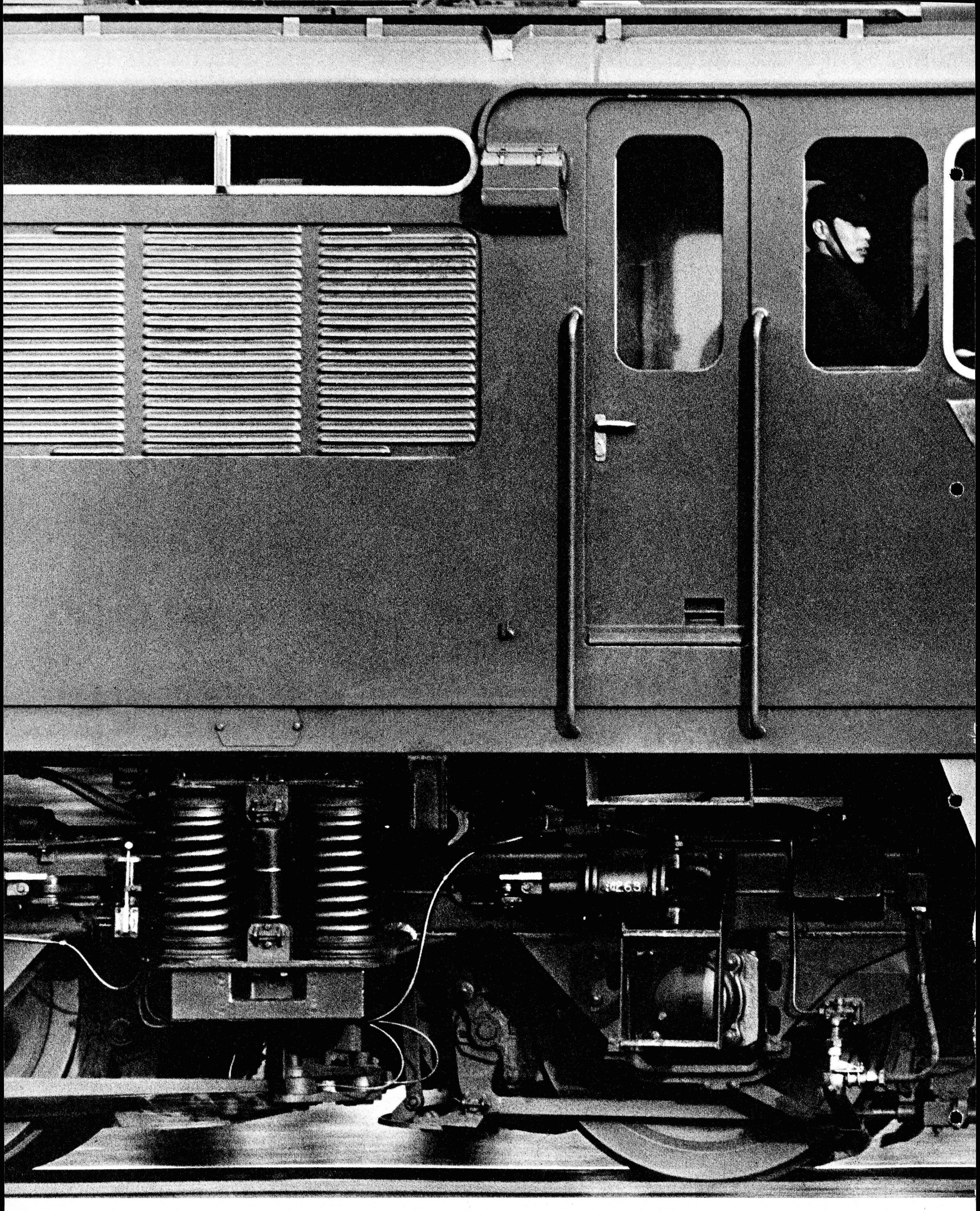
Early morning sunlight warms a frosty countryside. The spectacle of a steam locomotive in action warms my heart.





The attractive ugliness of Hato contrasts sharply with the aristocratic elegance of a Kodama type. Linked by a decade of technical development these two limited expresses help to provide the frequent punctual service for which the JNR is famous.





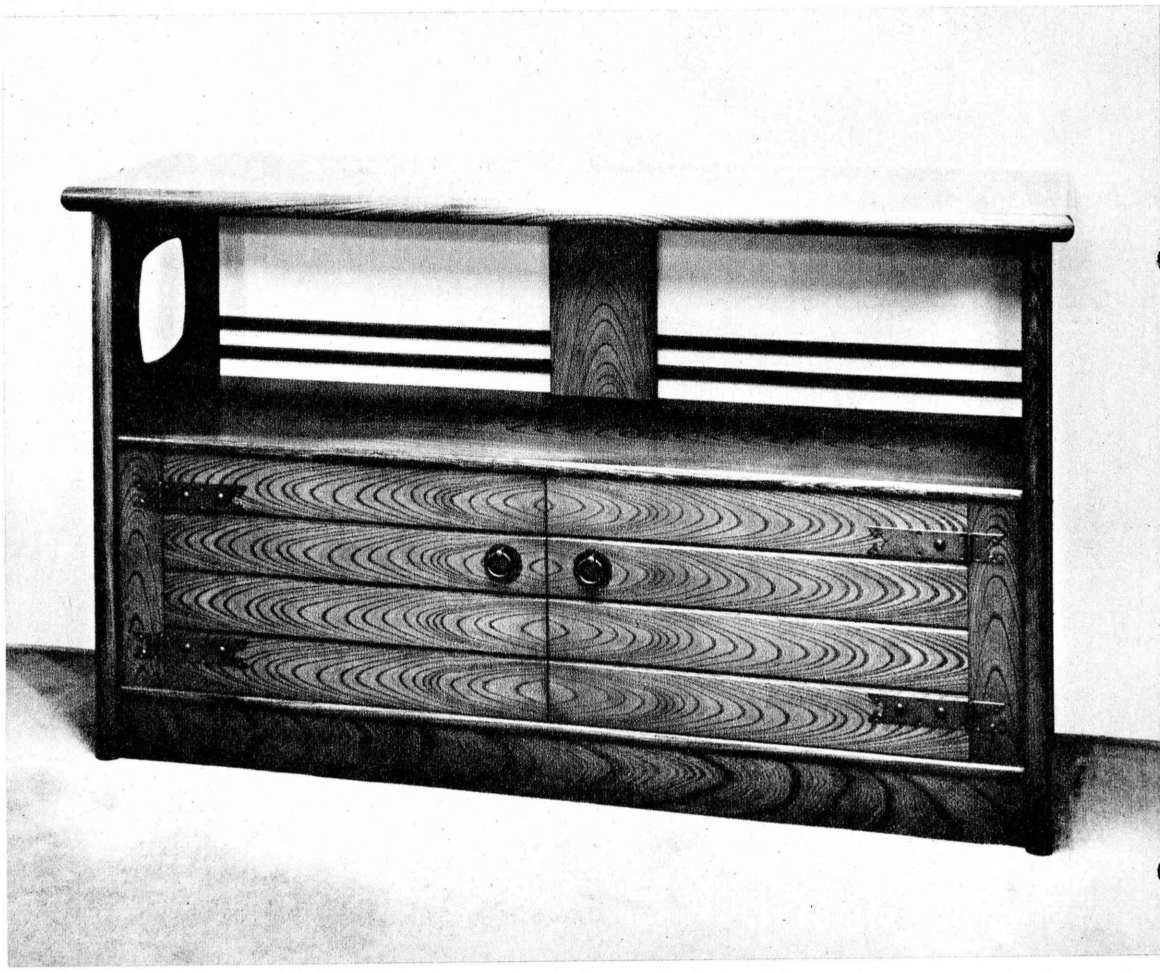


An electric locomotive speeds by in summer; after light snow in autumn the small plough will clear the way but in the dead of winter, a powerful rotary will be necessary for the big drift.

Furniture Showing Beauty of Wood

Interior of the Odakyu "HALC."

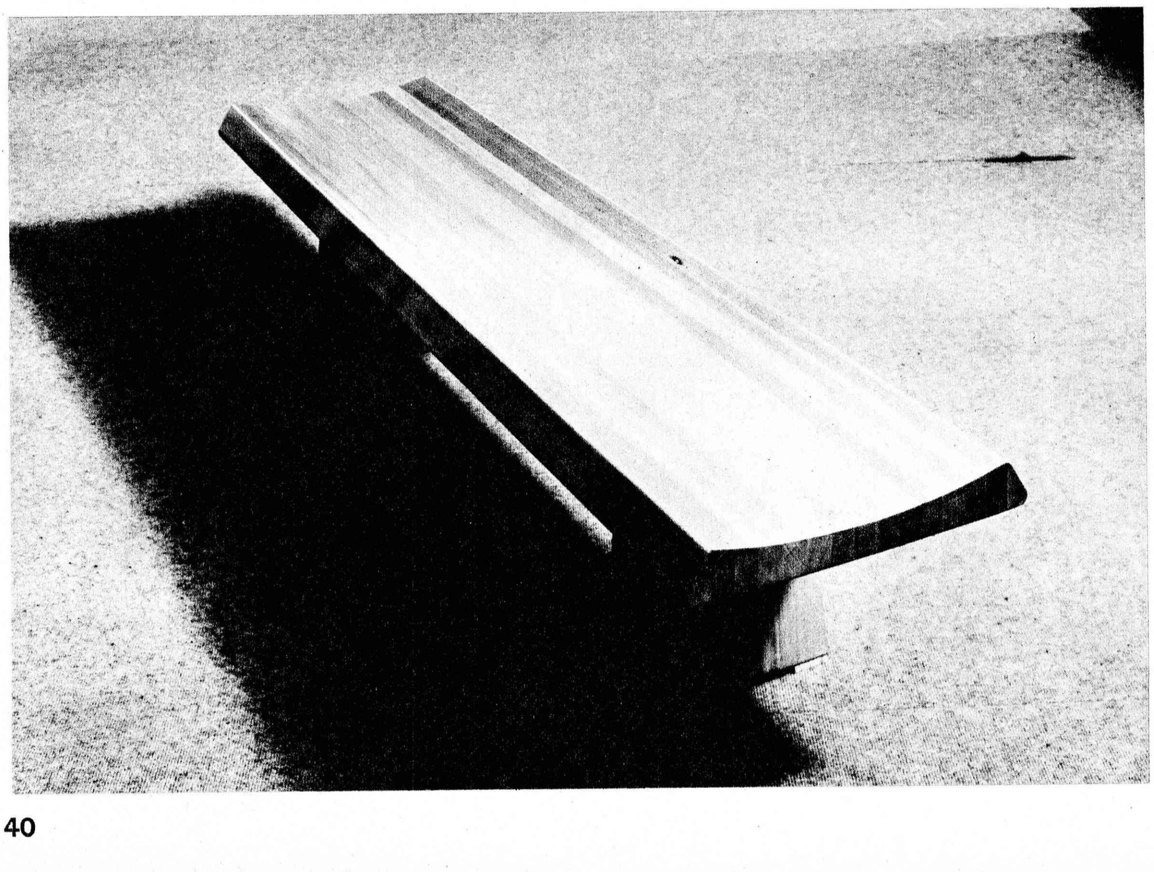


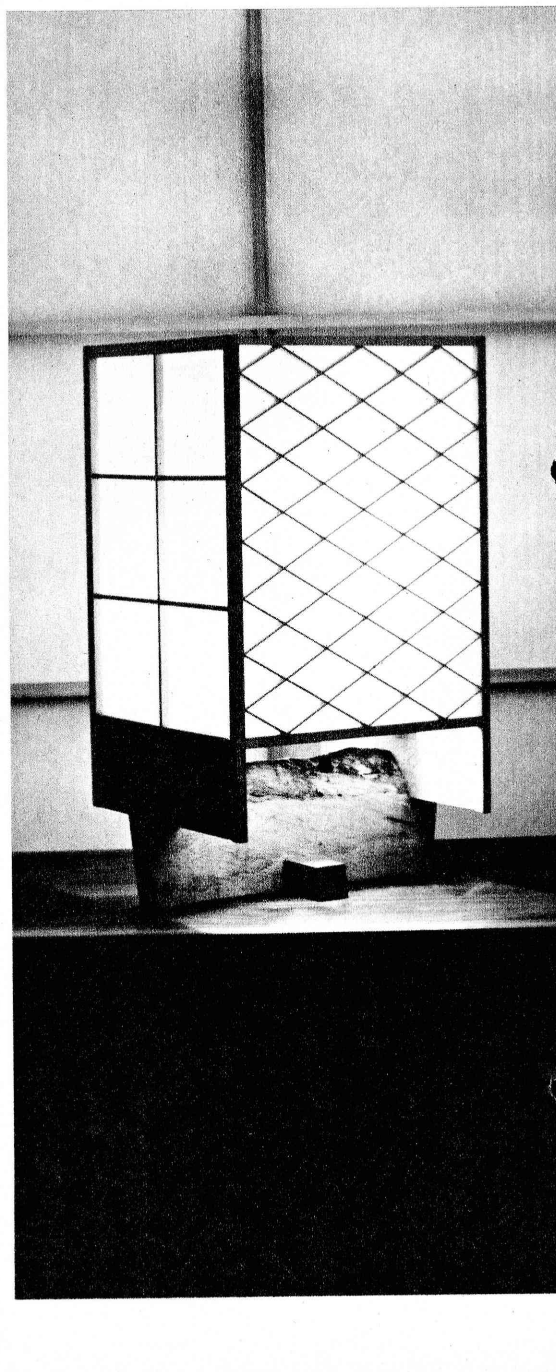


Japan is a land of trees and so naturally its traditional houses and furniture are made of wood. The beauty of Japanese-style structures and furniture is reflected in the beauty of wood. Carpenters and craftsmen of olden times devoted all their energies in bringing out the glory of wood and produced masterpieces, which are highly valued in these modern times of steel, stainless steel and other materials. But their spirit is fully inherited by furniture designers of today, for the excellent designs and quality of Japanese-made wooden furniture have now received an enthusiastic acclaim abroad as is evident from the growing exports. This may be ascribed to the background of traditional woodwork. Introduced here are several pieces of furniture giving full play to the beauty of wood.

Table (opposite page) and bench are the works of a contemporary designer exquisitely blending the Japanese tradition and the Western functionalism. Sideboard and lamp stand are folk art furniture. Though of ancient designs, they possess the beauty and functions to suit the present-day use.

The furniture introduced here is on sale at the **"HALC"** furniture section of the Annex to the **Odakyu Department Store** at Shinjuku, Tokyo.







Modern Sculptures in Verdant Forest

World's First Open-Air Sculpture Museum

The "Forest of Sculptures," was recently opened at Nino-Daira, Hakone in the center of the Fuji-Hakone-Izu National Park, one of Japan's most renowned resort centers. The open-air museum, exuding a romantic atmosphere befitting its name, the Forest of Sculptures (Hakone Open-Air Museum), is surrounded by mountains and hills on three



Photos by MICHIO NOGUCHI

sides with one side opening brightly toward the Pacific Ocean beyond freshly verdant forests and valleys. It consists of a 33,000-square-meter open-air exhibition site and a two-story ferro-concrete museum for indoor display, occupying a site of about 1,000 square meters.

Within the building, sculptural masterpieces are displayed in such a way as to show the current of modern sculpture since Auguste Rodin, including the representative works of such great sculptors in Europe as Emile Antoine Bourdelle, Aristide Maillol and Emilio Greco. It ranks among the best museums of its kind.

The open-air exhibition site, as laid out by sculptor Bukichi Inouye, consists of a circular plaza, children's square, promenades, including those fully utilizing the perspective method, a restaurant, "Plaza of Stars" shaped like a maze for children, and an artificial pond in which are works of the French sculptress Marta Pan. This pond is spanned by a suspension bridge, from which the sculptures below can be fully appreciated. These components are arranged in a wonderful balance, and "electronic music" is constantly broadcast through loud speakers.

The place serves as a park where families on outings can spend a pleasant time. And for students and art lovers, it is a superb open-air art museum. Freed from urban smog and noise, people can enjoy the masterpieces of modern sculpture and the works of great contemporary masters while breathing fresh air spiced with the fragrance of verdant foliage. This is indeed a truly refreshing experience for busy urban dwellers.

At this open-air exhibition site, the 1st International Exhibition of Modern Sculpture is now open (until October 31). On display are about 100 items, including the "invited" works of first-rate sculptors, such as Isamu Noguchi, Kenneth Armitage and Henri-Georges Adam, who are now active in Britain, the United States, France, Switzerland, Austria, Italy, Germany, the Netherlands and Venezuela as well as Japan, and other approved Japanese and foreign works. With a vast natural landscape as background, these diverse works are arranged with due consideration to their respective atmosphere and the space each occupies—for instance, these made of stainless steel and other metals polished like mirrors, formed by wire frames, primary structures, mobile works, and inflated vinyl ones. All the sculptural works, around the undulating exhibition site, strike the visitor with their fresh colors and incisive shapes.

There is a general feeling that modern sculpture like modern painting is too abstract for the general public to understand. But when we take a close look at them brightly shining in the sunlight in a natural wooded environment, we feel as if we are having a heart-to-heart conversation with each of them. And all the works seem quite alive. In our daily life, we are often fascinated by the shape or color of certain items, although we cannot say why. When we appreciate sculptures under the ever-changing blue skies and against the background of green verdure, we feel we can join the world of sculptors with a serene mind.

Japan has such peerless sculptural masterpieces as the "Guze-Kannon" and "Shaka-Sanzon" of the Horyuji Temple and the Great Buddha of the Todaiji Temple. Nevertheless, compared with pictures and other art works, sculptures in Japan have tended to be confined to shrines and temples where we can see them in dark places only through wire netting. Or many of them are in private homes away from the general public. But with a change in the mode of life and manners and customs, sculptural works, so far appreciated by only few people, have come to be opened to the general public. At the same time, with the advent of a new building era in big cities, paintings and sculptures have been found to be effective for enhancing the charm of individual buildings. As a result, sculptures have come to be appreciated and valued in a fresh light in Japan in recent years. Therefore, the birth of the Forest of Sculptures is indeed most timely and of great significance. If similar forests are set up in various parts of the country, they will undoubtedly become popular with the public.

Guide to the "Forest of Sculptures"

Location—Nino-Daira, Hakone Machi, Ashigara-shimo-gun, Kanagawa Prefecture. One hour and 20 minutes' ride by the "Romance Car" train of Odakyu from Shinjuku Station (fare: 580 yen) takes you to the terminal station of Yumoto, whence the Hakone Tozan Densha (Mountain Climbing Electric Train) lifts you up to Nino-Daira Station. The open-air museum is a few minute's walk from the station. For travelers from Osaka, the New Tokaido Trunk Line Superexpress "Kodama" reaches Odawara Station in three hours and 25 minutes (fare: 3,280 yen). At this station, a change to the Hakone Tozan Densha.

Hours—The museum is open from 9 a.m. to 8:30 p.m. in the May-September period and from 9 a.m. to 6 p.m. in the October-April period.

Admission Fee—200 yen for adults

Closed—Wednesdays

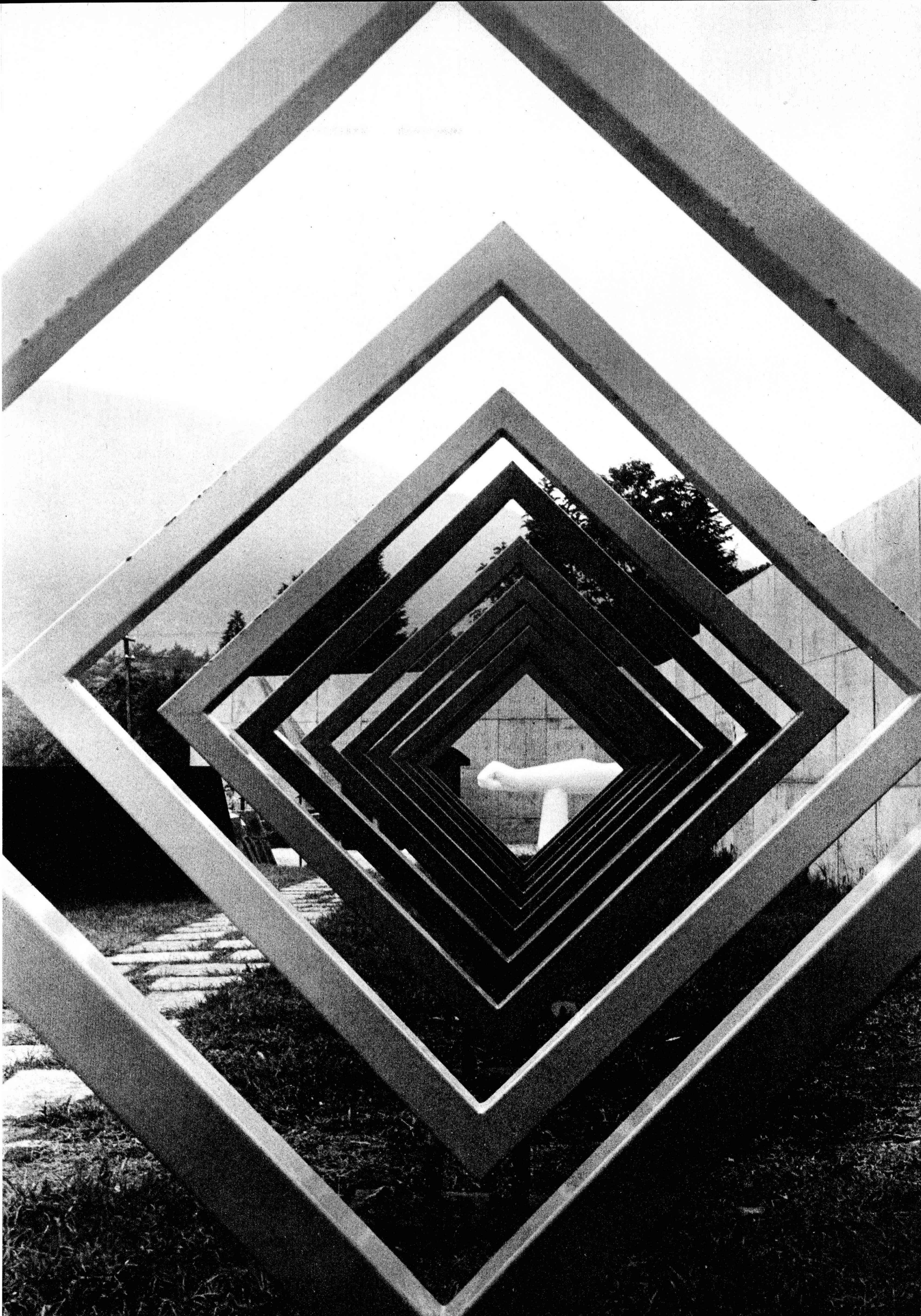
(By car to the museum, the best way is to enter the Atsugi-Odawara Toll Road from the Atsugi Interchange of the Tomei Expressway (toll: 300 yen for Tomei Expressway and 200 yen for the Atsugi-Odawara section). Travel time to Nino-Daira via Yumoto: about 2 hours.



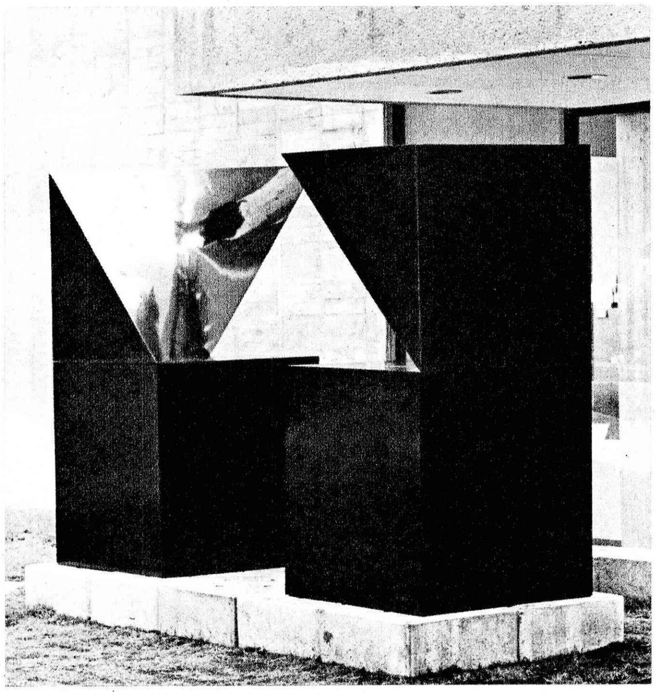
Right: "Dying Sea Bird" by Henri-Georges Adam (France). Left: "Pierced White Bird," a white marble object by the same sculptor. Fixed into the wall is "Hakone" by Alicia Penalba (France).



"Octetra," a red cement object made by Isamu Noguchi. While showing beautiful construction, it resembles a play tool on a recreation ground.



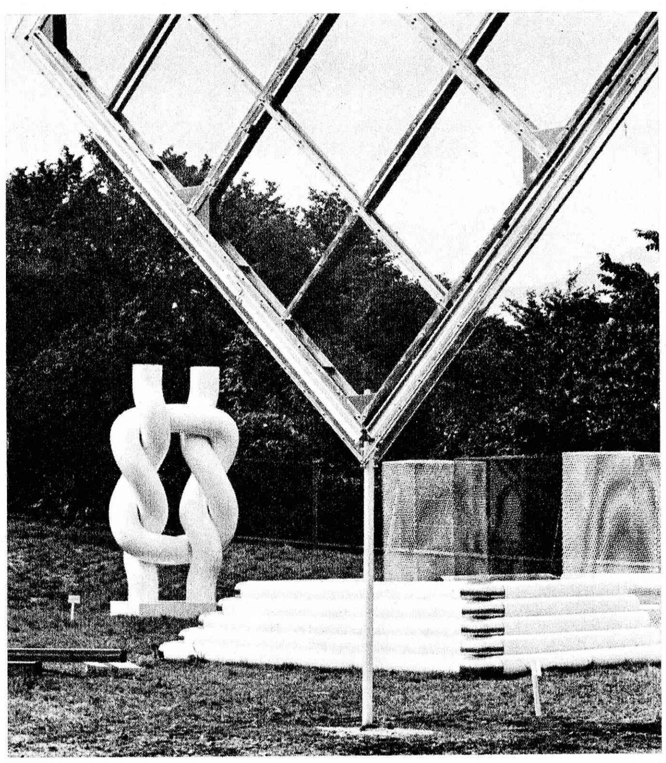
"Cosmical Color Space" by Shigeo Matsubara, a lozenge-shaped creation with colors changing from red to purple. Kenneth Armitage's work "Arm" is seen.



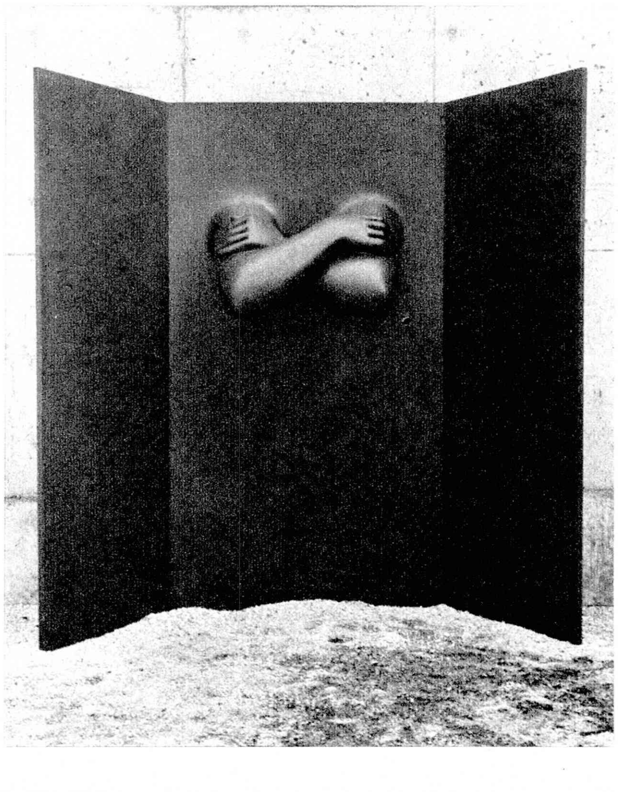
Right: "Bisection of Cube" by Masakazu Horiuchi, which has been awarded the Grand Prix. Below: Water, air, the sun, verdant forests, the people appreciating sculptures . . . A dialogue with sculptures is born amid beautiful nature.

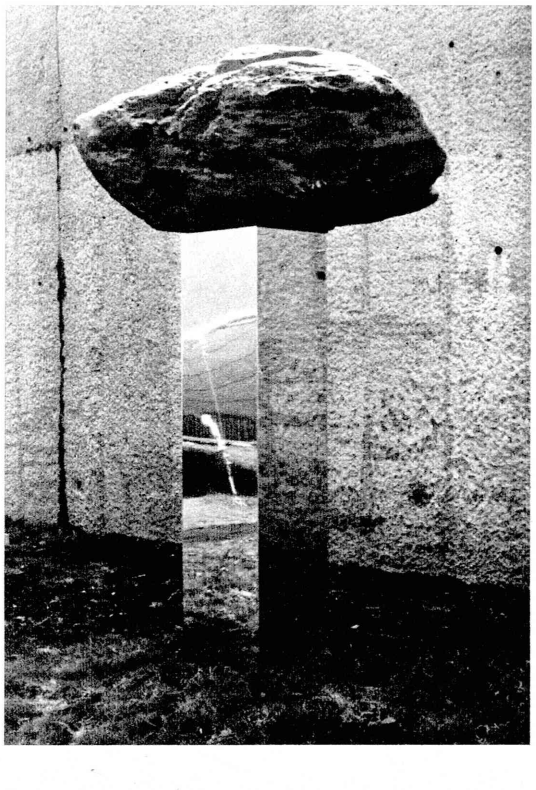












With a vast natural landscape as background, these diverse works are arrangeed with due consideration to their respective atmosphere.

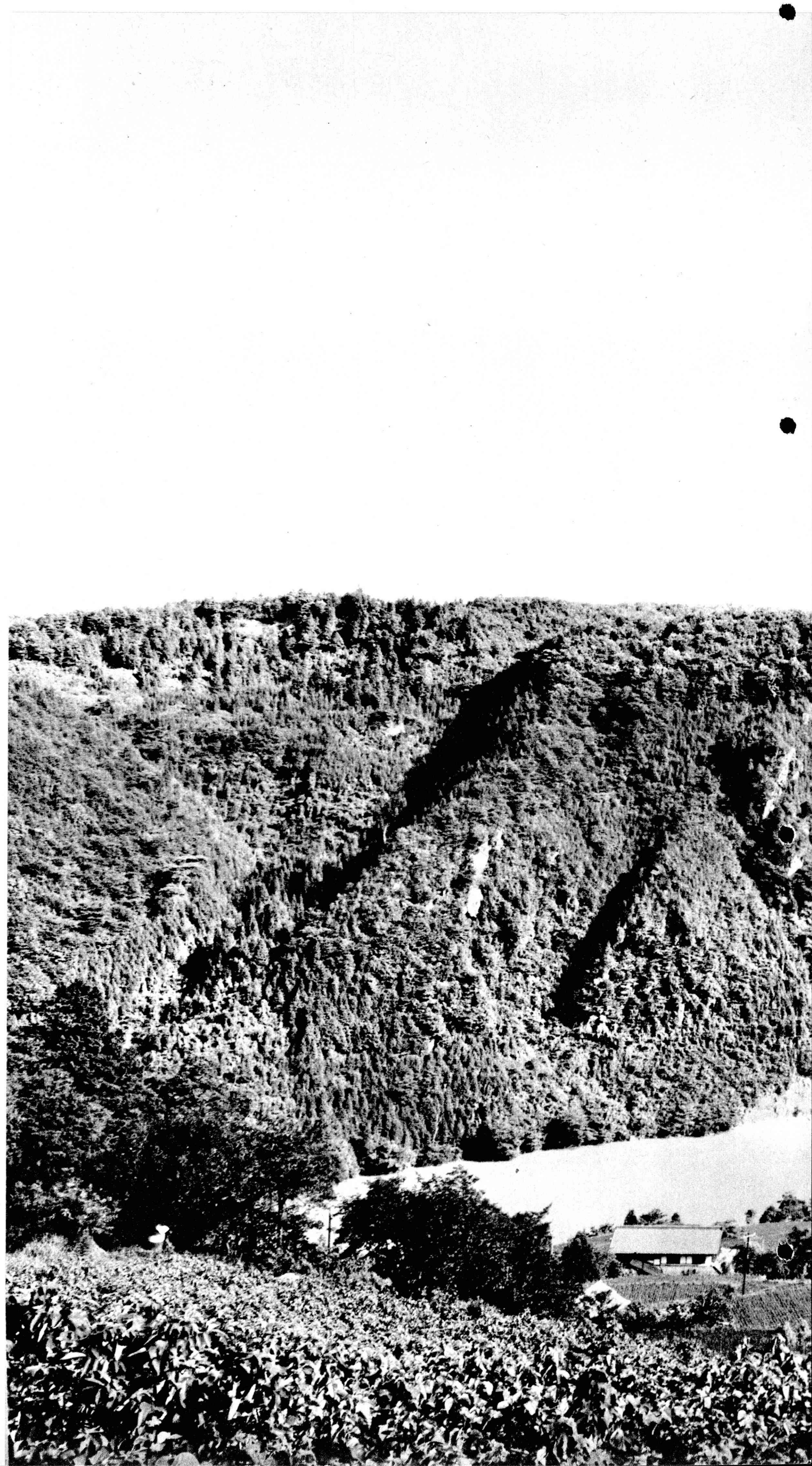
PICTURESQUE STREAM

THE Kiso River originates as a stream in the Japan Alps, dubbed the "Roofs of Japan," then flowing through the center of the Japanese archipelago and finally emptying itself into the Pacific Ocean. The Kiso is 193 kilometers long, and its catchment areas aggregate 5,020 square kilometers. Among Japanese rivers, it ranks 12th in length and 11th in catchment basin. In point of scale, therefore, the Kiso River cannot be termed representative of Japanese rivers. Nevertheless, the name carries far greater weight among the people than its scale might suggest. For it has served as the setting for numerous historic developments and literary and artistic works. Moreover, all railways and roads connecting Tokyo, Japan's eastern center, and Osaka, in the west, must cross this river.

The upper stream of the Kiso River flows through narrow valleys sandwiched between the Hida and the Kiso Ranges. Mountains along the river, methodically afforested from olden times, are renowned as among the most beautiful forests in the country. Besides, the National Highway No. 19—that is, the "Kiso Kaido"—running parallel to the stream is an old one with a history of more than 1,000 years. Villages dotting the highway are steeped in a peculiar atmosphere of tranquility, which can be generated only by a long history. The serene stream, the beautifull forests, the charming atmosphere of villages and the traditions nurtured there—all this has served as the prime inspiration for many immortal masterpieces of literature, such as the "haiku" (short poems) of Basho Matsuo (1644–1694) and the novels of Toson Shimazaki (1872–1943).

After flowing through the mountains, the Kiso River enters the Nobi Plain. Here it suddenly confronts variegated creations of modern civilization. While providing drinking and industrial water to millions of people, the Kiso flows under the iron bridges of Japan's principal arteries, such as the Meishin (Nagoya-Kobe) Expressway, National Highway No. 1, the New Tokaido Line, the Tokaido Line and the Kansai Line. Finally, it runs exactly through the halfway point between Yokkaichi and Nagoya, bristling with heavy and chemical industrial complexes, and then pours into the Pacific Ocean. And the surface is filled with static beauty consonant with man-made structures along the river in stark contrast with the dynamic splendor of the upper stream created through harmony with surrounding nature.

Photos by NOBUAKI FUKUI



OF KISO RIVER



A mid-stream scene of the Kiso River.

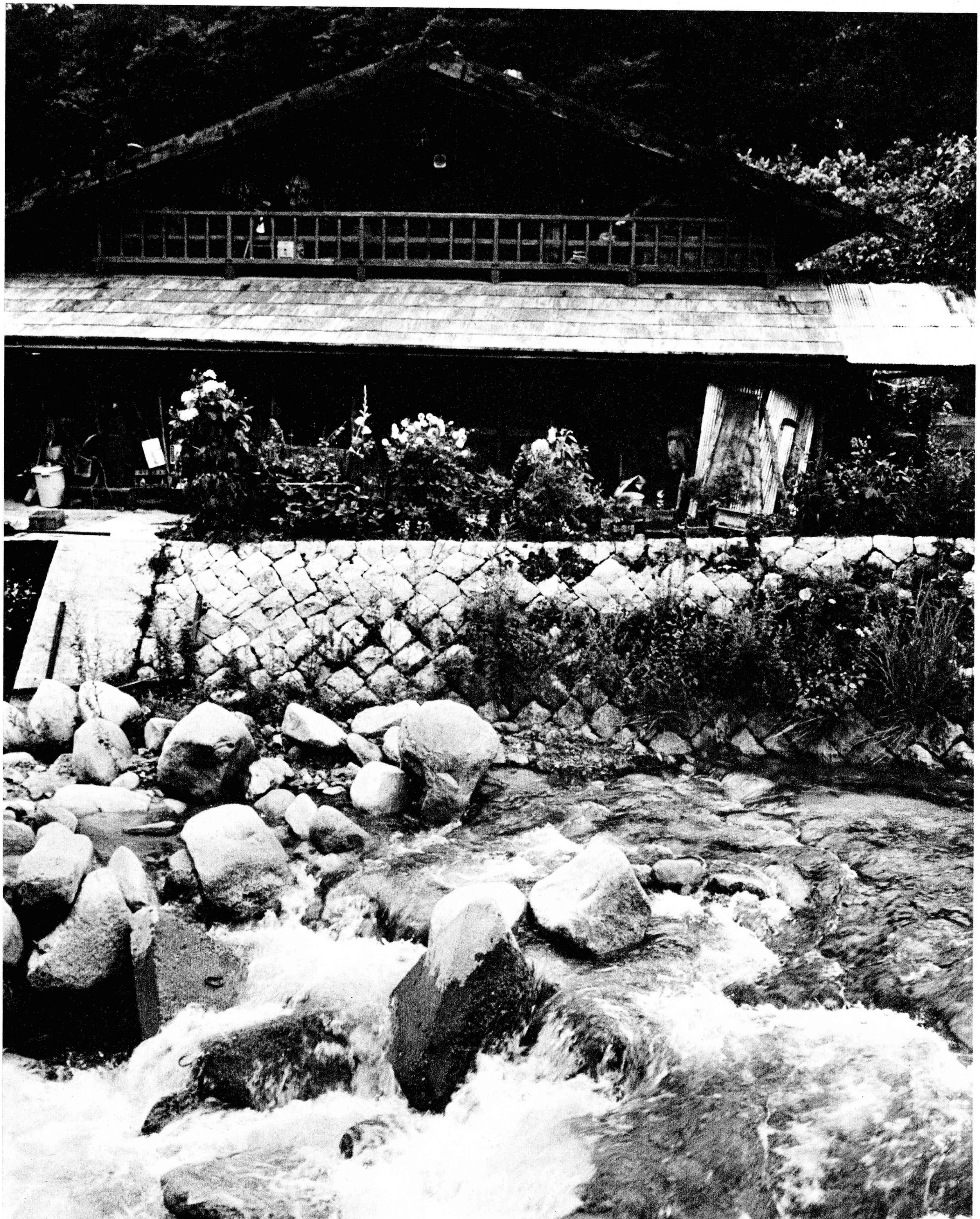




Left: Limpid stream at the head of the Kiso River. Only the sound of the water and the chirping of birds are heard. Right: Upper stream of the Kiso River flowing through a remote valley, hidden in tranquil morning haze.



Mountains along the river are well afforested. The sound of the stream is audible in a quiet atmosphere.



A house on the upper stream of the river. Residents along the upper stream rely on lumbering for a living.

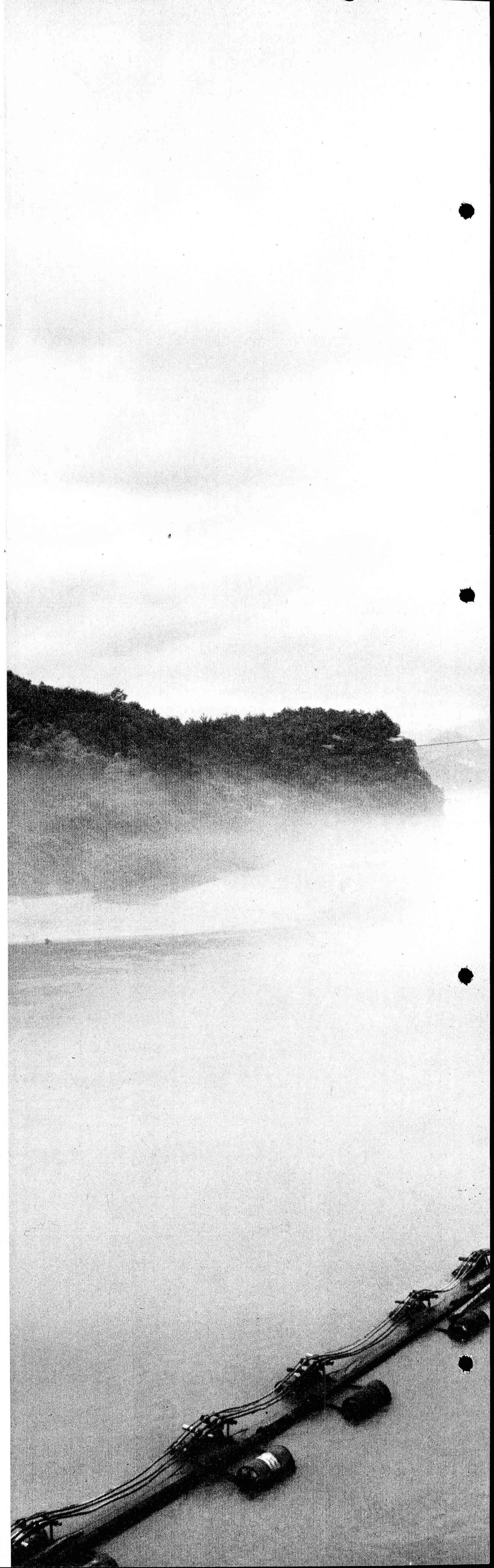
The upper stream of the Kiso River flows through narrow valleys sandwiched between the Hida and the Kiso ranges.







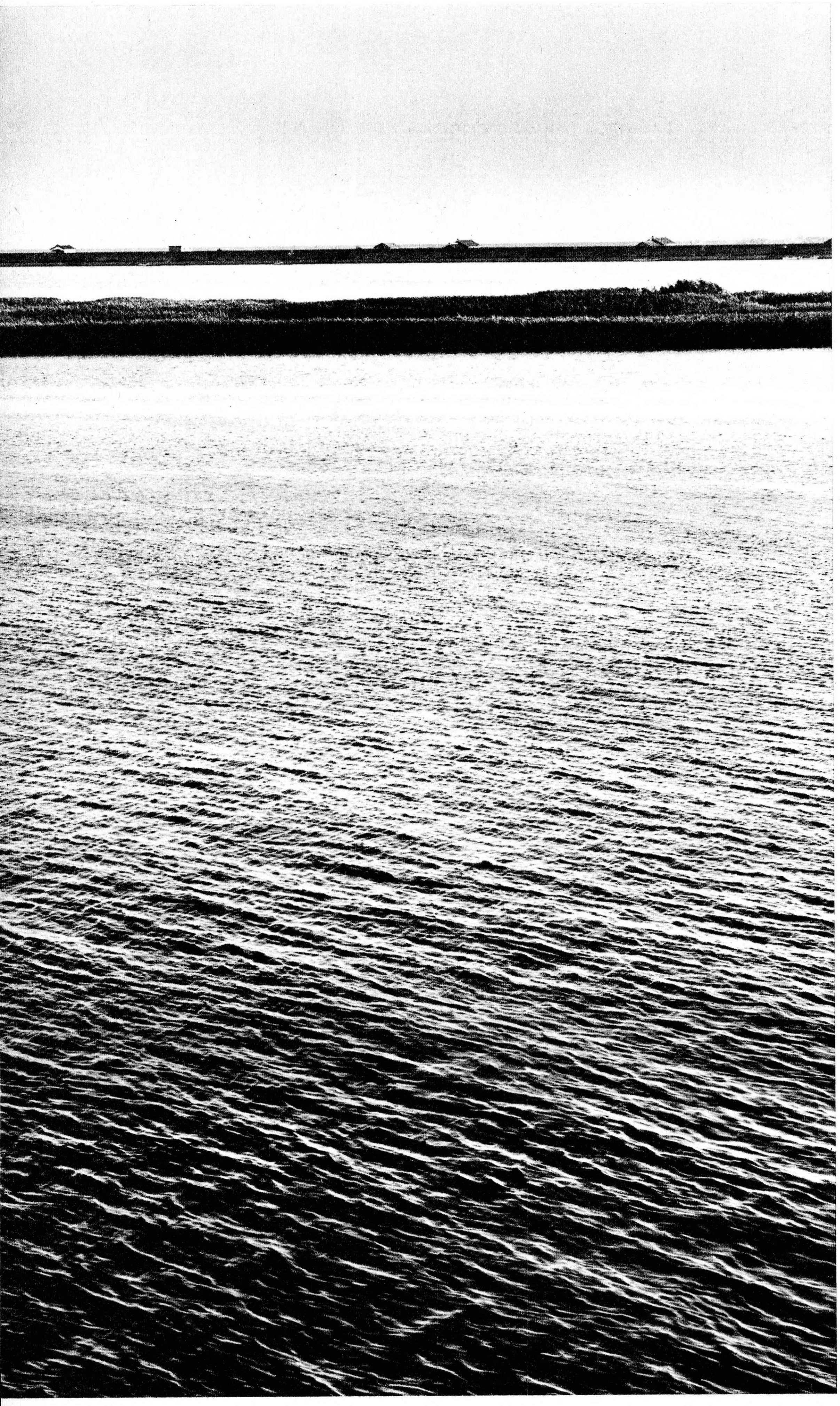
Above: Kiso-Fukushima, the biggest town on the upper stream of the river. It is known as a town of "timber," where logs produced along the river are collected.







Many dams have been built to utilize the waters of the Kiso River. They have created a new beauty through the combination of artificiality and nature.





Right: Kiso River Bridge of the New Tokaido Line. Above: The water of the Kiso River now flows into the Pacific Ocean after a 200-kilometer journey, during which it has fostered good timber, generated electricity, delighted tourists and provided water to support the life of residents along the stream.







A night scene at the mouth of the Kiso River. The lights of a petrochemical industrial complex in Yokkaichi are reflected on the river surface.

New Play Center for Children



Heavy traffic congestion in Japan is called a "traffic war" because many casualties on the roads, have finally caused automobiles to invade playgrounds, kill and wound many of children. Now, the acute shortage of safe playgrounds is a big headache for both parents and children. As a novel solution to this dilemma, the Shibuya Ward in Tokyo has built the Children's Welfare Center, a building designed as children's playgrounds from top to bottom, for the purpose of promoting their welfare. A rare structure of its kind in Japan, it is a four-story ferroconcrete building with a basement, built at a cost of about 280 million yen, with a total floor space of 3,600 square meters, including a day nursery on the first floor.

In the basement is a 25-meter-long warm-water pool usable all the year round. The first floor houses a day nursery. The second floor is a playroom for infants, equipped with various play facilities, such as blocks, utensils for housekeeping play and sandbox. Infants are free to play there with parents. The third floor consists of an indoor gymnasium and a playroom for lower-grade primary school children, while the fourth floor houses a library and a playroom for upper-grade primary school children. The roof has a roller skating rink with a circumference of 63 meters and a recreation ground. The multicolored playrooms are equipped with varied play tools, including football game platforms, magic boxes, skill games, monocycles and stilts.

Since admission is free, the delighted children, so far deprived of play space, are flocking to the center every day. The ward authorities are pleasantly surprised that a long queue of children forms before the opening time of 10 a.m. A daily capacity is said to be 500 children. But now, as many as 2,600 or a little more than five times the capacity are admitted. The children admitted are replaced three times a day at intervals of two hours.

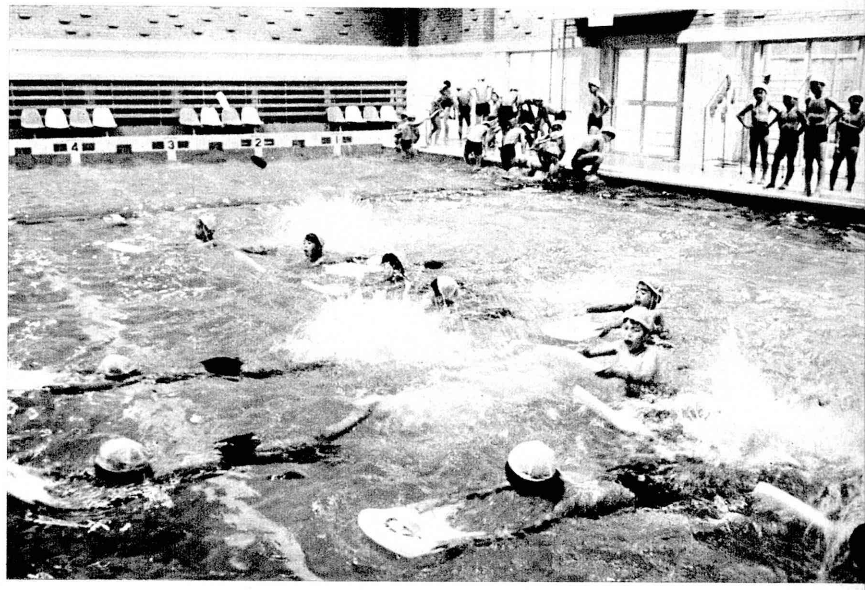
Some say they are sorry to see children confined to a building. Yet children do not mind what adults say, while sprightly and delightfully moving about the center.

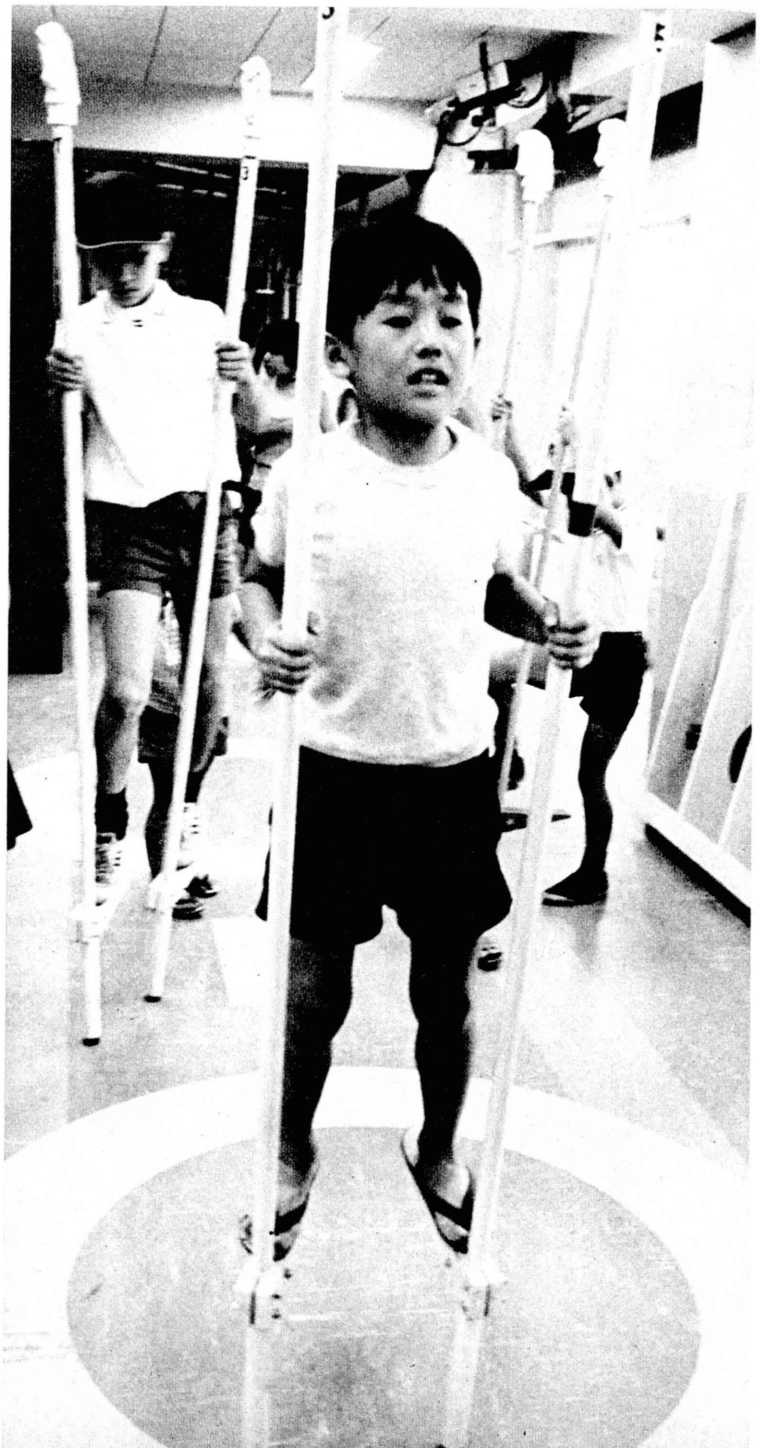


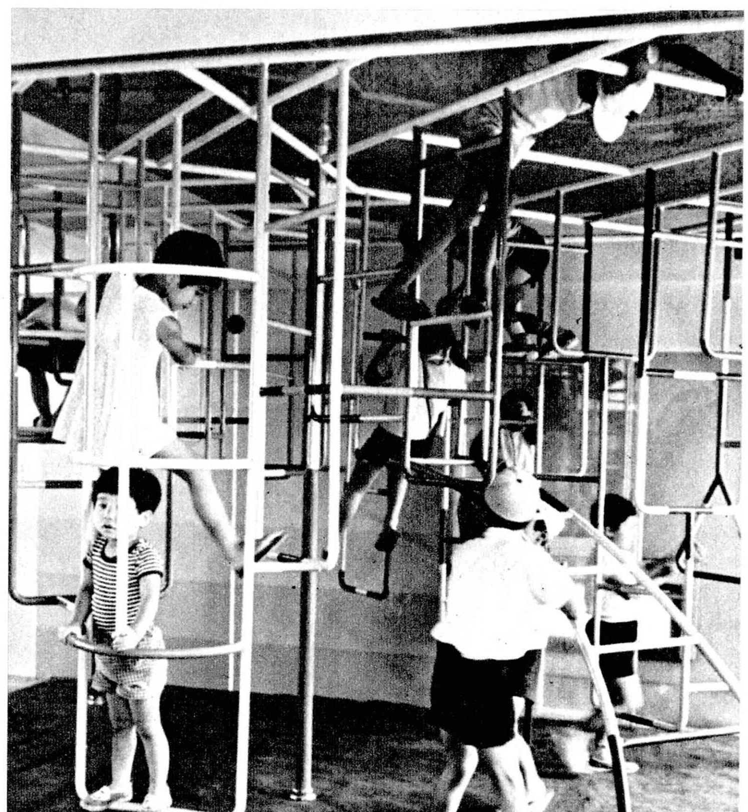


Delighted children are flocking to the play center every day. Monitering TV sets are installed to see if children are not engaged in dangerous play.

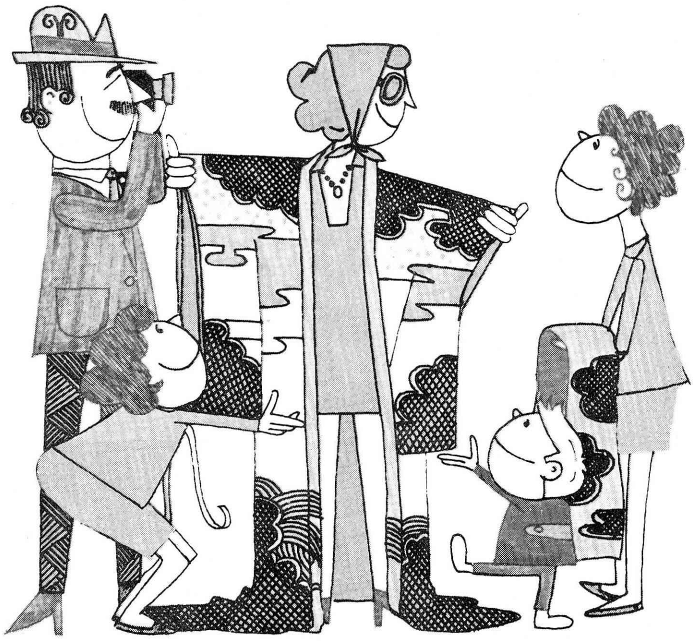






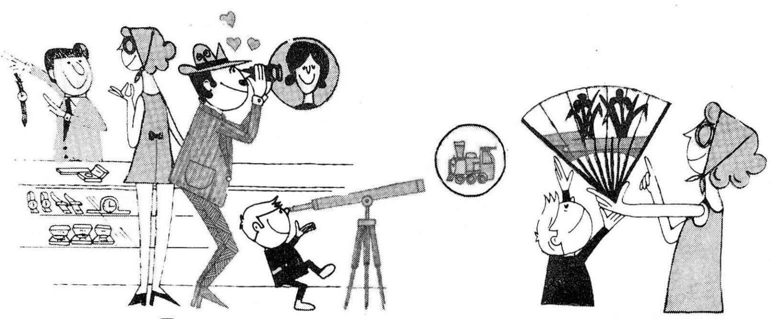


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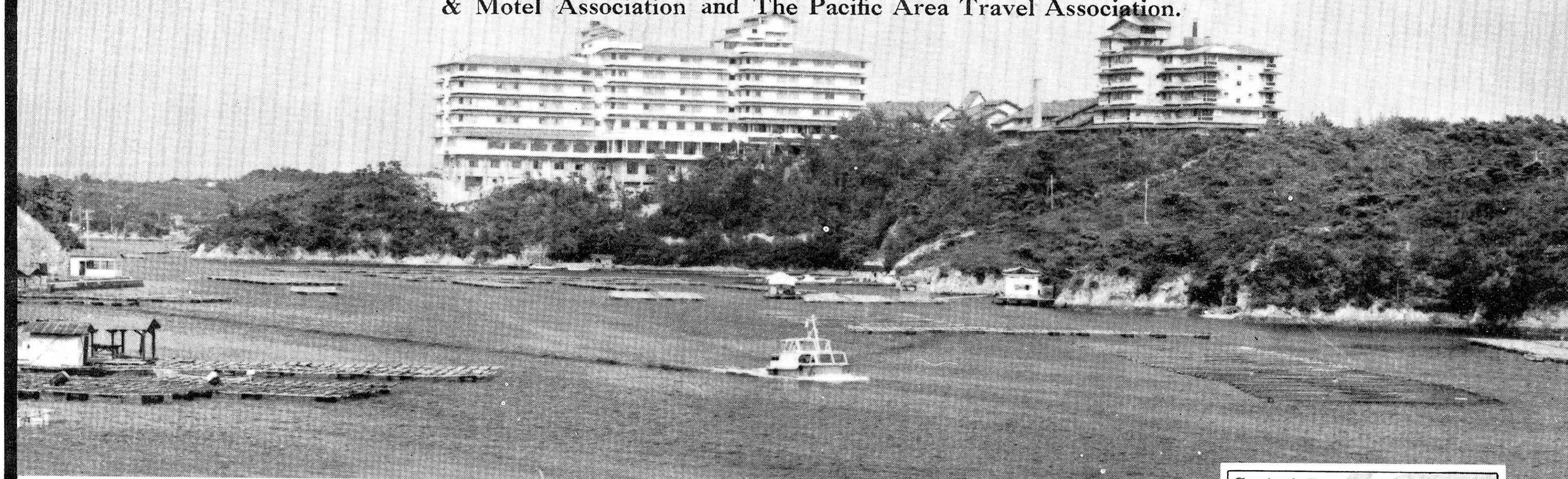
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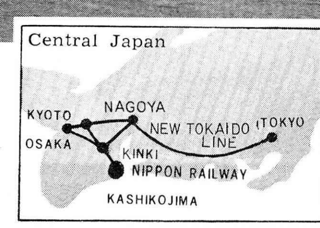
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